

Service
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V20 107E5



107E51/87

Service Manual

Horizontal frequencies
30 - 70 kHz

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SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

IMPORTANT SAFETY NOTICE

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Proper service and repair is important to the safe, reliable operation of all PHILIPS Company** Equipment. The service procedures recommended by PHILIPS and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully Read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper Service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. PHILIPS could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, PHILIPS has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by PHILIPS must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

** Hereafter throughout this manual, PHILIPS Company Will be referred to as PHILIPS.

WARNING

Critical components having special safety characteristics are identified with a ▲ by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ▲ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from PHILIPS. PHILIPS assumes no liability, express or implied, arising out of any unauthorized modification Of design. Servicer assumes all liability.

* Broken Line

FOR PRODUCTS CONTAINING LASER :

- DANGER- Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.
- CAUTION- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- CAUTION- The use of optical instruments with this product will increase eye hazard.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

Technical Data

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Technical Specification*

CRT
Size and deflection :17 inch/41cm, flat/square
Deflection angle : 90 degrees
Dot pitch : 0.27mm with black matrix
Face treatment : Anti-glare, anti-static,
Light transmission : 47%(PHL),46%(CPT),52%(LG),
53.5%(ORION)
Phosphor : P22

Recommended display area : 12.0" x 9.0" / 306 x 230 mm
Maximum display area : 12.9" x 9.7" / 325 x 244 mm

Scanning
Horizontal scanning : 30 - 70 KHz
Vertical scanning : 50 - 160 Hz

Video
Video dot rate : 108 Mhz

Input impedance
-Video : 75 Ohms
- Sync : 4.7K Ohms

Signal input level : 0.7Vpp
Separate sync

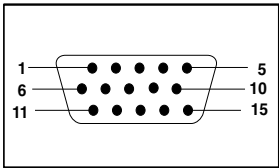
Sync input signal : Separated sync. with TTL level
Sync polarities : Positive or negative

White Color Temperature
Chromaticity CIE coordinates:
at 9300 °k x = 0.283 +/- 0.015 y = 0.297 +/- 0.015
at 6500 °k x = 0.313 +/- 0.015 y = 0.329 +/- 0.015
at sRGB x = 0.313 +/- 0.015 y = 0.329 +/- 0.015
Carton box
Size (with pedestal) : 419(W)x383(H)x397(D)
Net weight : 14 Kg
Power supply : 90 - 264 VAC, 50/60 Hz
Power consumption : 90 Watts Max.

Operating condition
Temperature : 0 °C - 40 °C
Relative Humidity : 10 % - 90 % (W/O condensation)

Storage condition
Temperature : - 25 °C - 65 °C
Relative Humidity : 5 % - 95 % (W/O condensation)

Pin assignment :



The 15-pin D-sub connector(male) of the signal cable :

Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	+5V DDC supply
2	Green video input	10	Logic. Ground
3	Blue video input	11	Identical output-connected to pin 10
4	Identical output-connected to pin 10	12	Serial data line(SDA)
5	fground	13	H.Sync /H + V
6	Red video ground	14	V.Sync(VCLK for DDC)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

Data Storage

Factory preset modes:
This monitor has 8 factory-preset modes as indicated in the following table :

	Mode	Resolution	Frequen		Sync polarity	
			H(KHz)	V(Hz)	H	V
M01	VGA	720 x 400	31.5	70	-	+
M02	VGA	640 x 480	31.47	60	-	-
M03	VGA	640 x 480	43.3	85	-	-
M04	SVGA	800 x 600	46.9	75	+	+
M05	SVGA	800 x 600	53.674	85	+	+
M06	EVGA	1080 x 960	60.0	60	+	+
M07	EVGA	1024 x 768	68.7	85	+	+
M08		1280 x 1024	64.0	60	+	+

Automatic Power Saving

If you have VESA's DPMS compliance display card or software installed in your PC, the monitor can automatically reduce power consumption when power saving function active. And if an input from keyboard, mouse or other input devices is detected, the monitor will automatically "wake up". The following table shows the power consumption and signaling of this automatic power saving feature :

Power Management Definition						
VESA's mode	VIDEO	H-SYNC	V-SYNC	POWER USED	POWER SAVING(%)	LED COLOR
ON	Active	Yes	Yes	Tyical 64 w	0 %	Green
OFF	Blanked	No	No	<1 w	98 %	Flashing Green

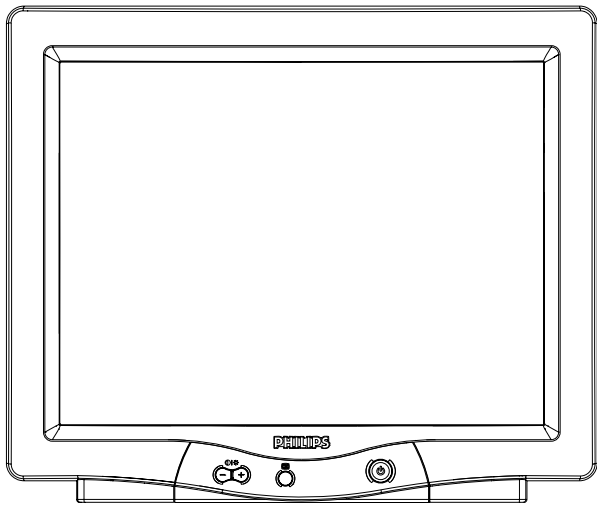
This monitor is ENERGY STAR compliant.
As an ENERGY STAR Partner, PHILIPS has determined that this product meets the ENERGY STAR guidelines for energy efficiency



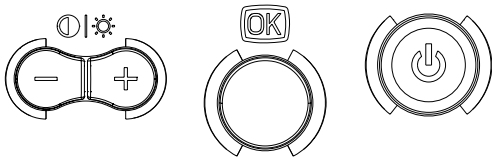
ENERGY STAR® is a U.S. registered mark. AS AN ENERGY STAR PARTNER, DELL Computer Corporation HAS DETERMINED THAT THIS PRODUCT MEETS THE ENERGY STAR GUIDELINES FOR ENERGY EFFICIENCY.

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Front View

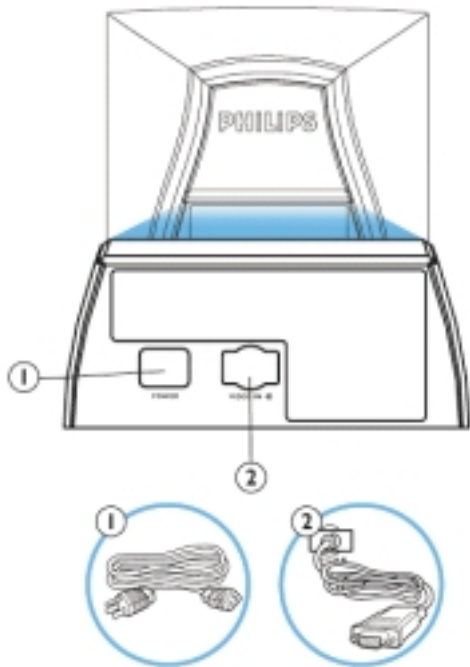


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- Power button switches your monitor on.
- OK button which when pressed will take you to the OSD controls
- Contrast hotkey. When the "-" button is pressed, the adjustment controls for the CONTRAST will show up.
- Brightness hotkey. When the "+" button is pressed, the adjustment controls for BRIGHTNESS will show up.
- "-" and "+" buttons, are used for adjusting the OSD of your monitor.

Rear view



1. Power in - attach power cable here.
2. Video In - this is a cable which is already attached to your monitor. Connect the other end of the cable to your PC.

Description of the On Screen Display

What is the On-Screen Display?

This is a feature in all Philips monitors which allows an end-user to adjust screen performance of monitors directly though an on-screen instruction window. The user interface provides user-friendliness and ease-of-use when operating the monitor.

Basic and simple instruction on the control keys.

On the front controls of your monitor, once you press the **OK** button, the On Screen Display (OSD) Main Controls window will pop up and you can now start making adjustments to your monitor's various features.

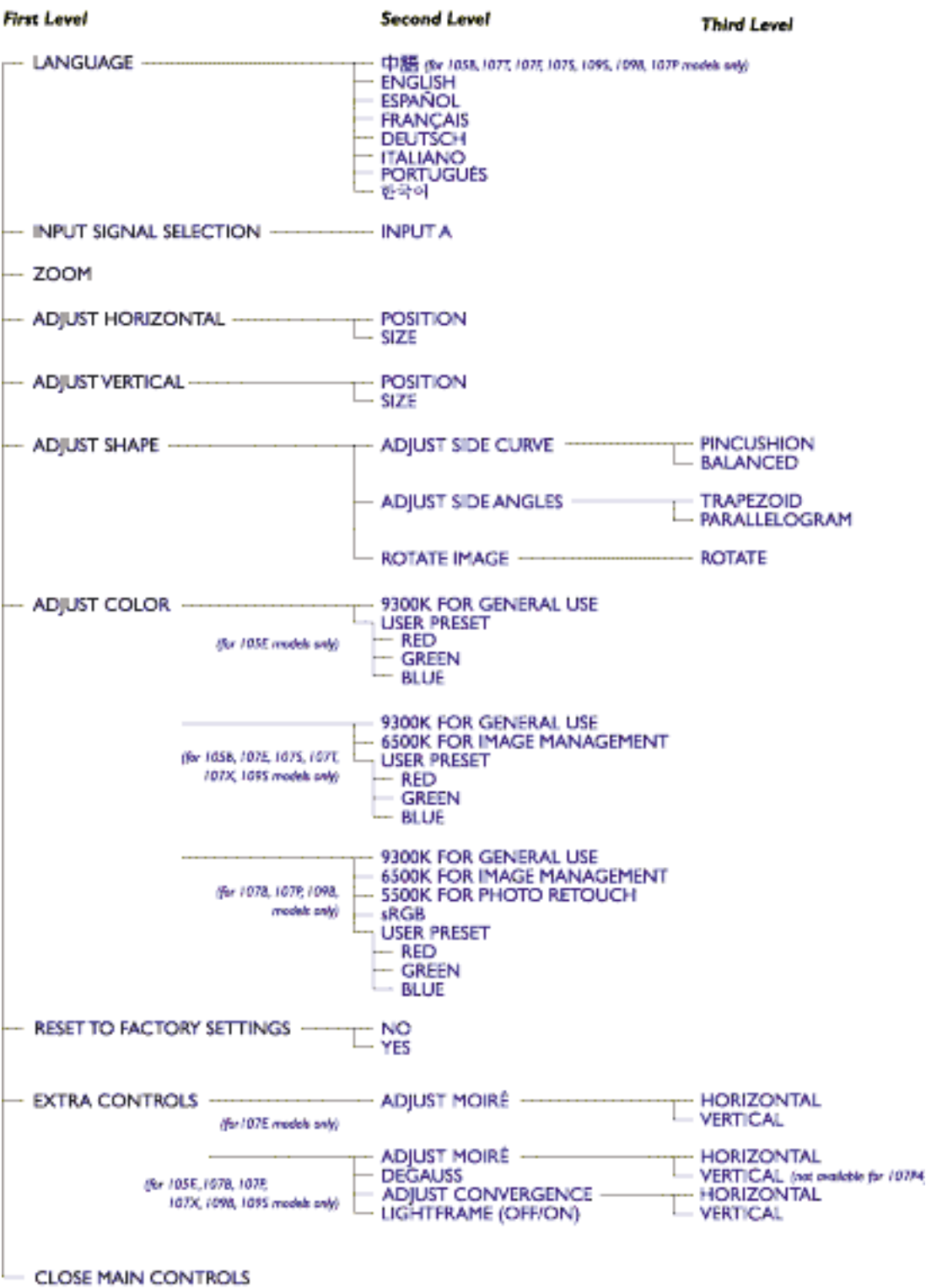
Use the **-** **+** the keys to make your adjustments within.



The OSD Tree

Below is an overall view of the structure of the On-Screen Display. You can use this as reference when you want to later on work your way around the different adjustments.

CRT OSD tree / English



* Specifications are subject to change without prior notice.

OSD Adjustments

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The OSD Controls

BRIGHTNESS

To adjust your screen's brightness, follow the steps below. Brightness is the overall intensity of the light coming from the screen. A 50% brightness is recommended.

- 1) Press the button on the monitor. The BRIGHTNESS window appears.



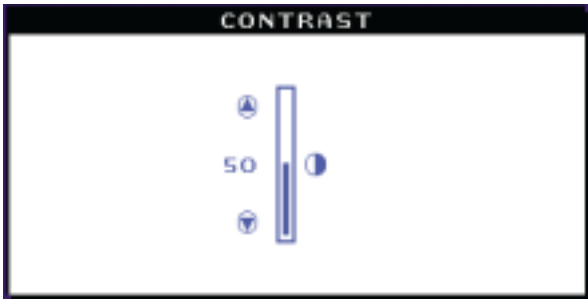
- 2) Press the or button to adjust the brightness.
3) When the brightness is adjusted to the level desired, stop pressing the or button and after three seconds the BRIGHTNESS window will disappear with the new adjustment saved.

Smart Help After the BRIGHTNESS window has disappeared, to continue to the CONTRAST window, follow the steps under CONTRAST.

CONTRAST

To adjust your screen's contrast, follow the steps below. Contrast is the difference between the light and dark areas on the screen. A 100% contrast is recommended.

- 1) Press the button on the monitor. The CONTRAST window appears.



- 2) Press the or button to adjust the contrast.
3) When the contrast is adjusted to the level desired, stop pressing the Button and after three seconds the CONTRAST window will disappear with the new adjustment saved.

Smart Help After the CONTRAST window has disappeared, to continue to the MAIN CONTROLS, follow the steps under LANGUAGE

LANGUAGE

The ON SCREEN DISPLAY shows its settings in one of five languages. The default is English, but you can select French, Spanish, German, or Italian.

- 1) Press the button on the monitor. The MAIN CONTROLS window appears. LANGUAGE should be highlighted.
2) Press the button again. The LANGUAGE window appears.



- 3) Press the or button until the desired language is highlighted.



- 4) Press the button to confirm your selection and return to MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted...

Smart Help After returning to MAIN CONTROLS . . .
. . . to continue to INPUT SIGNAL SELECTION, press the button until INPUT SIGNAL SELECTION is highlighted. Next, follow steps 3 - 5 under INPUT SIGNAL SELECTION.
. . . to exit completely, press the button



OSD Adjustments (Continued)

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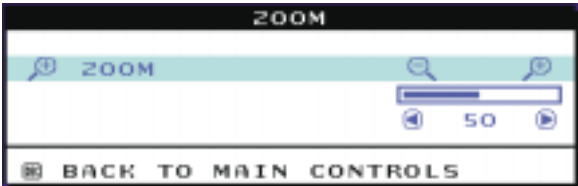
ZOOM




ZOOM increases or decreases the size of the images on your screen. To adjust the ZOOM follow the steps below.



- 1) Press the  button on the monitor. The MAIN CONTROLS window appears.
- 2) Press the  button until ZOOM is highlighted.



- 3) Press the  button. The ZOOM window appears.





- 4) Press the  or  button to adjust ZOOM.
- 5) Press the  button to confirm your selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.


Smart Help After returning to MAIN CONTROLS . . .
. . . to continue to ADJUST HORIZONTAL, press the  button until ADJUST HORIZONTAL is highlighted. Next, follow steps 3 - 7 under ADJUST HORIZONTAL.
. . . to exit completely, press the  button

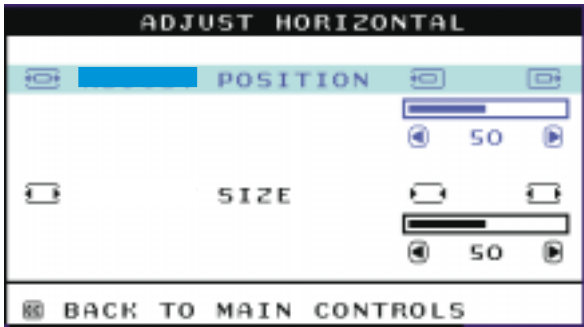
ADJUST HORIZONTAL





ADJUST POSITION under ADJUST HORIZONTAL shifts the image on your screen either to the left or right. Use this feature if your image does not appear centered. ADJUST SIZE under ADJUST HORIZONTAL expands or controls the image on your screen, pushing it out toward the left and right sides or pulling it in toward the center.

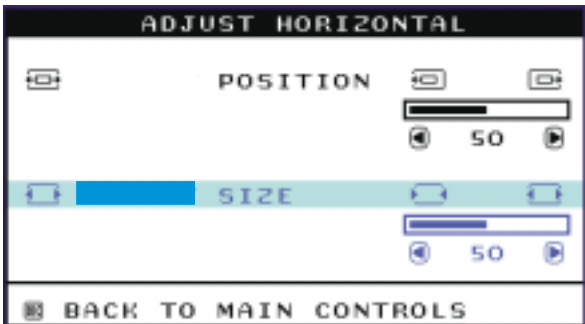
- 1) Press the  button on the monitor. The MAIN CONTROLS window appears.
- 2) Press the  button until ADJUST HORIZONTAL is highlighted.








- 3) Press the  button. The ADJUST HORIZONTAL window appears. ADJUST POSITION should be highlighted.



- 4) Press the  or  button to move the image to the left or right.
- 5) When the position is adjusted, press the  button to return to MAIN CONTROLS window, or press the  to highlight ADJUST SIZE.




- 6) To adjust the horizontal size, press the  or  button.
- 7) When the size is adjusted, press the  button to return to MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .
. . . to continue to ADJUST VERTICAL, press the  button until ADJUST VERTICAL is highlighted. Next, start with step 3 under ADJUST VERTICAL and follow the directions.
. . . to exit completely, press the  button

ADJUST VERTICAL

ADJUST POSITION under ADJUST VERTICAL shifts the image on your screen either up or down. Use this feature if your image does not appear centered. ADJUST SIZE under ADJUST VERTICAL expands or controls the image on your screen, pushing it out toward the top or bottom or pulling it in toward the center.

- 1) Press the  button on the monitor. The MAIN CONTROLS window appears.

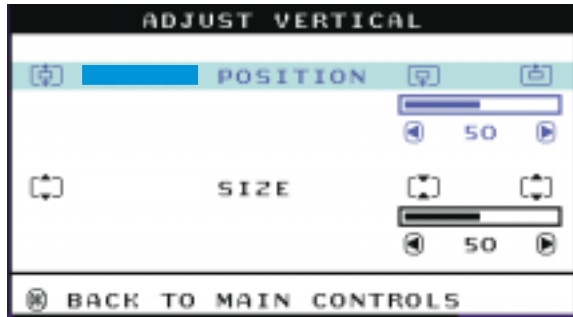
OSD Adjustments (Continued)

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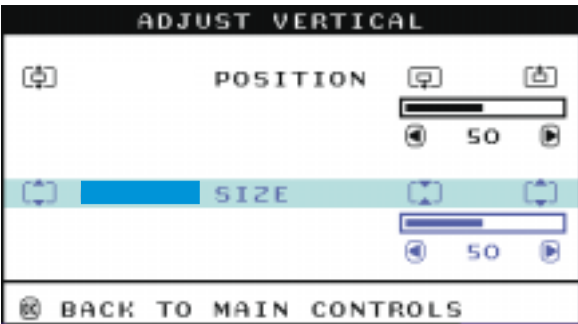
2) Press the button until ADJUST VERTICAL is highlighted.



3) Press the button. The ADJUST VERTICAL window appears. ADJUST POSITION should be highlighted.



4) Press the or button to move the image up or down.
5) When the position is adjusted, press the button to return to MAIN CONTROLS window, or press the button to highlight ADJUST SIZE.



6) To adjust the vertical size, press the or button.
7) When the size is adjusted, press the button to return to MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .
. . . to continue to ADJUST SHAPE, press the button until ADJUST SHAPE is highlighted. Next, start with step 3 under ADJUST SHAPE and follow the directions.
. . . to exit completely, press the button

ADJUST SHAPE
ADJUST SIDE CURVE

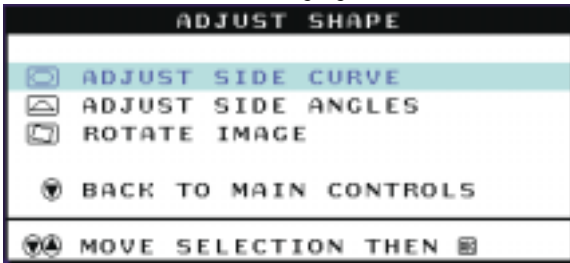
ADJUST SIDE CURVE under ADJUST SHAPE allows you to adjust two of the five preset options. These two options are PINCUSHION and BALANCED pincushion. Note: use these features only when the picture is not square.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

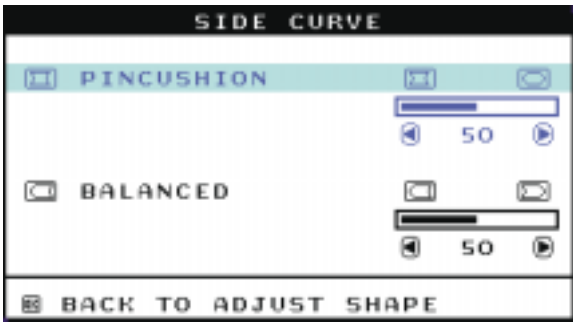
2) Press the button until ADJUST SHAPE is highlighted.



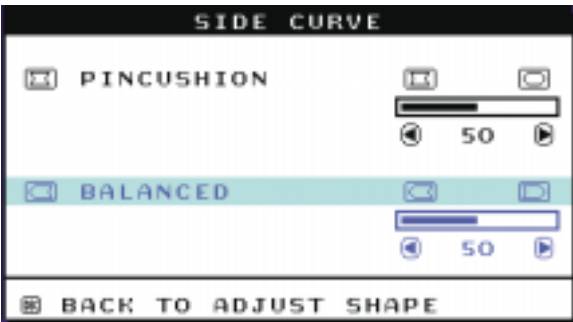
3) Press the button. The ADJUST SHAPE window appears. ADJUST SIDE CURVE should be highlighted.



4) Press the button. The SIDE CURVE window appears. PINCUSHION should be highlighted.



5) To adjust the pincushion, press the or button.
6) When the pincushion is adjusted, press the button to highlight BALANCED or press the button to return to the ADJUST SHAPE window.



7) To adjust the balanced pincushion, press the or button.
8) When the balanced pincushion is adjusted, press the button to return to the ADJUST SHAPE window. BACK TO MAIN WINDOWS will be highlighted.
9) Press the button to return to the MAIN CONTROLS window, or press the button until ADJUST SIDE ANGLES is highlighted.

OSD Adjustments (Continued)

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Smart Help After returning to MAIN CONTROLS . . .
...to continue to ADJUST SIDE ANGLES, start with step 5 under ADJUST SIDE ANGLES and follow the directions.
...to exit completely, press the **EXIT** button twice.
...to adjust only the BALANCED pincushion, follow steps 1 - 4 above, then press the **EXIT** button, and follow steps 7 - 9.

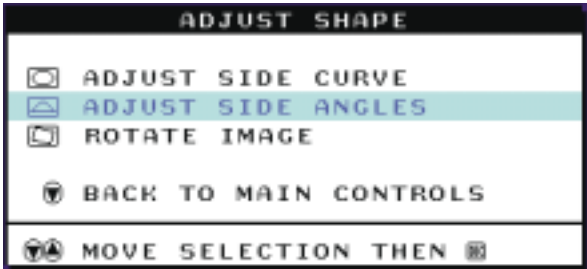
ADJUST SIDE ANGLES

ADJUST SIDE ANGLES under ADJUST SHAPE allows you to adjust two of the five preset options. These two options are TRAPEZOID and PARALLELOGRAM. Note: use these features only when the picture is not square.

- 1) Press the **EXIT** button on the monitor. The MAIN CONTROLS window appears.
- 2) Press the **EXIT** button until ADJUST SHAPE is highlighted.



- 3) Press the **EXIT** button. The ADJUST SHAPE window appears. ADJUST SIDE CURVE should be highlighted.

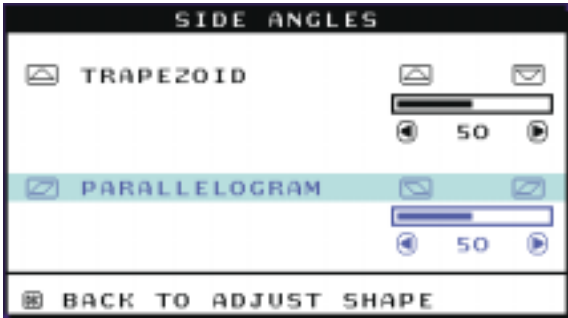


- 4) Press the **EXIT** button to highlight ADJUST SIDE ANGLES.
- 5) Press the **EXIT** button. The SIDE ANGLES window appears. TRAPEZOID should be highlighted.



- 6) To adjust the trapezoid, press the **EXIT** or **EXIT** button.

- 7) When the trapezoid is adjusted, press the **EXIT** button to highlight PARALLELOGRAM or press the **EXIT** button to return to the ADJUST SHAPE window.



- 8) To adjust the parallelogram, press the **EXIT** or **EXIT** button.
- 9) When the parallelogram is adjusted, press the **EXIT** button to return to the ADJUST SHAPE window. BACK TO MAIN WINDOWS will be highlighted.
- 10) Press the **EXIT** button to return to the MAIN CONTROLS window, or press the **EXIT** button until ROTATE IMAGE is highlighted.

Smart Help After returning to MAIN CONTROLS . . .
...to continue to ROTATE IMAGE, start with step 5 under ROTATE IMAGE and follow the directions.
...to exit completely, press the **EXIT** button twice.
...to adjust only the PARALLELOGRAM, follow steps 1 - 4 above, then press the **EXIT** button, and follow steps 7 - 9

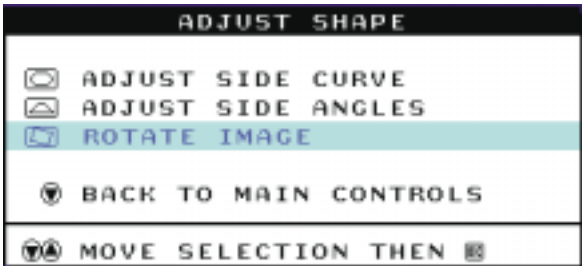
ROTATE IMAGE

ROTATE IMAGE under ADJUST SHAPE allows you to adjust one of the five preset options. These two options are PINCUSHION and BALANCED pincushion. Note: use this feature only when the picture is not square.

- 1) Press the **EXIT** button on the monitor. The MAIN CONTROLS window appears.
- 2) Press the **EXIT** button until ADJUST SHAPE is highlighted.



- 3) Press the **EXIT** button. The ADJUST SHAPE window appears. ADJUST SIDE CURVE should be highlighted.
- 4) Press the **EXIT** arrow until ROTATE IMAGE is highlighted.



OSD Adjustments (Continued)

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5) Press the button. The ROTATE IMAGE window appears. ROTATE should be highlighted.



- 6) To adjust the rotation, press the or button.
- 7) When the rotation is adjusted, press the button to return to the ADJUST SHAPE window. BACK TO MAIN CONTROLS should be highlighted.
- 8) Press the button to return to MAIN CONTROLS.

Smart Help After returning to MAIN CONTROLS . . .
... to continue to ADJUST COLOR, press the button until ADJUST COLOR is highlighted. Next, start with step 3 under ADJUST COLOR and follow the directions.
...to exit completely, press the button twice.

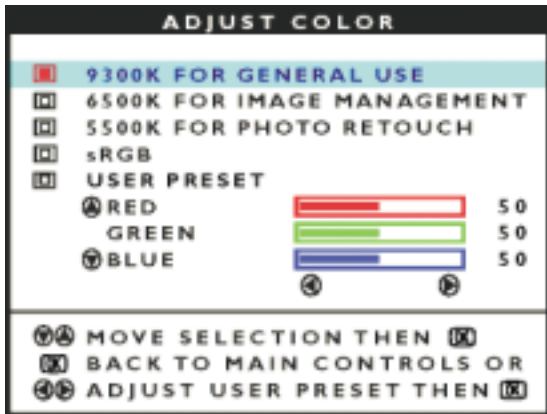
ADJUST COLOR

Your monitor has two preset options you can choose from. The first option is for GENERAL USE, which is fine for most applications. The second option is for GAMES, which is for playing computer games. When you select one of these options, the monitor automatically adjusts itself to that option. There is also a third option, USER PRESET, which allows you to adjust the colors on your screen to a setting you desire.

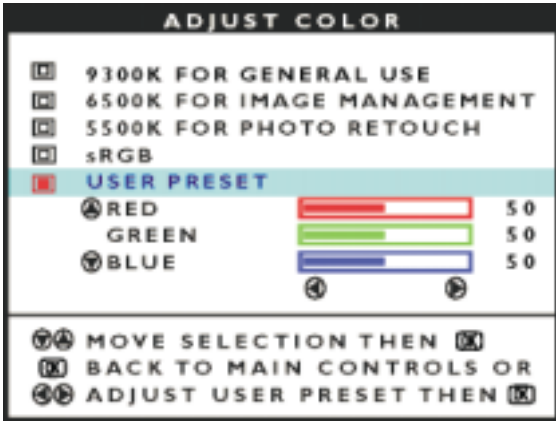
- 1) Press the button on the monitor. The MAIN CONTROLS window appears.
- 2) Press the button until ADJUST COLOR is highlighted.



3) Press the button. The ADJUST COLOR window appears.



- 4) Press the or button to highlight 9300K for GENERAL USE, 6500K for GAMES, or USER PRESET.
- 5) Once you have highlighted GENERAL USE or GAMES, press the button to confirm your selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.



- 6a) If USER PRESET is highlighted, press the button to highlight RED. Next, press the LEFT CURSOR or RIGHT CURSOR button to adjust the color red.
- 6b) When finished with RED, press the button to highlight GREEN. Next, press the or button to adjust the color green.
- 6c) When finished GREEN, press the button to highlight BLUE. Next, press the or button to adjust the color blue.
- 6d) When all adjustments are complete, press the button to confirm your adjustments and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS. . .
... to continue to RESET TO FACTORY SETTINGS, press the button until RESET TO FACTORY SETTINGS is highlighted. Next, start with step 3 under RESET TO FACTORY SETTINGS.
... to exit completely, press the button.

RESET TO FACTORY SETTINGS

RESET TO FACTORY SETTINGS returns everything in all the windows to factory presets.

- 1) Press the button on the monitor. The MAIN CONTROLS window appears.
- 2) Press the button until RESET TO FACTORY SETTINGS is highlighted.





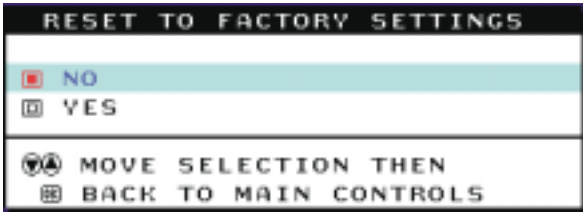
3) Press the button. The RESET TO FACTORY SETTINGS window appears.


OSD Adjustments (Continued)



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4) Press the  or  button to select YES or NO. NO is the default. YES returns all settings to their original factory adjustments.




5) Press the  button to confirm your selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.


Smart Help After returning to MAIN CONTROLS . . .
. . . to continue to EXTRA CONTROLS, press the  button until EXTRA CONTROLS is highlighted. Next, start with step 3 under EXTRA CONTROLS.
. . . to exit completely, press the  button.

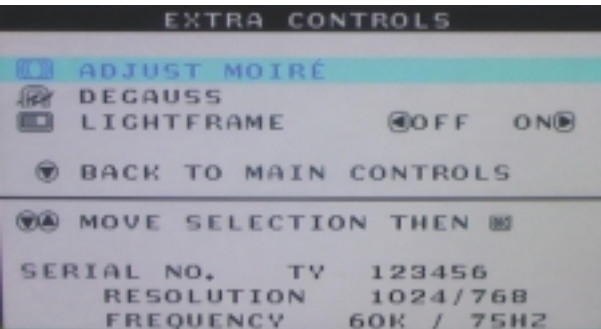
EXTRA CONTROLS ADJUST MOIRE


EXTRA CONTROLS is a set of three features, including ADJUST MOIRE. Moire is a fringe pattern arising from the interference between two superimposed line patterns. To adjust your moire, follow the steps below. Note: Use only if necessary. By activating ADJUST MOIRE, sharpness can be affected.

- 1) Press the  button on the monitor. The MAIN CONTROLS window appears.
- 2) Press the DOWN CURSOR button until EXTRA CONTROLS is highlighted.






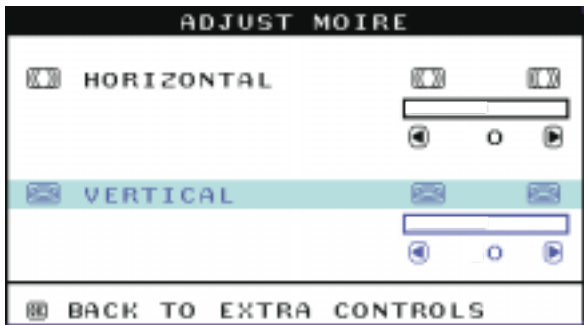
3) Press the  button. The EXTRA CONTROLS window appears. will ADJUST MOIRE will be highlighted.








4) Press the  button. The ADJUST MOIRE window appears. HORIZONTAL will be highlighted.



- 5) To adjust the horizontal moire, press the  or  button.
- 6) When the horizontal moire is adjusted, press the  button to highlight VERTICAL.



- 7) To adjust the vertical moire, press the  or  button.
- 8) When the vertical moire is adjusted, press the  button to return to the EXTRA CONTROLS window. BACK TO MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .
. . . to continue to DEGAUSS, press the  button until DEGAUSS is highlighted. Next, start with step 3 under EXTRA CONTROLS, DEGAUSS.
. . . to exit completely, press the  button.

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OSD Adjustments (Continued), Troubleshooting

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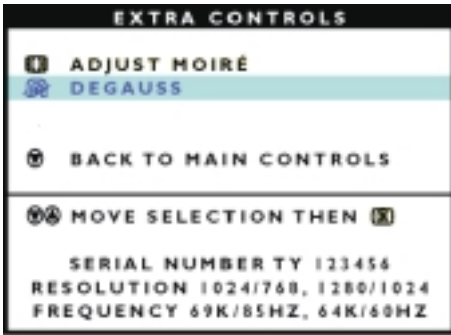
DEGAUSS

EXTRA CONTROLS is a set of three features, including DEGAUSS. Degaussing removes electromagnetic build up that may distort the color on your screen.

- 1) Press the button on the monitor. The MAIN CONTROLS window appears.
- 2) Press the button until EXTRA CONTROLS is highlighted.



- 3) Press the button. The EXTRA CONTROLS window appears. ADJUST MOIRE will be highlighted.
- 4) Press the button until DEGAUSS is highlighted.



- 5) To degauss your screen, press the button. Your screen will be degaussed, then the MAIN CONTROLS window will reappear. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .
. . . to exit completely, press the button.

CLOSE MAIN CONTROLS



Monitor Specific Troubleshooting

Self-Test Feature Check (STFC)

Your monitor provides a self-test feature that allows you to check whether your monitor is functioning properly. If your monitor and computer are properly connected but the monitor screen remains dark, run the monitor self-test by performing the following steps:

1. Turn off both your computer and the monitor.

2. Unplug the video cable from the back of the computer.

3. Turn on the monitor.

If the monitor is functioning properly, you will see a OSD message as shown in the following illustration:



This box also appears during normal system operation if the video cable becomes disconnected or damaged. This box will remain on for one minute, go off five seconds, then on for one minute, and will repeat cycle.

1. Turn off your monitor and reconnect the video cable; then turn on both your computer and the monitor.
2. While in self-test mode, the LED remains green and the pattern remains on and stationary.

If your monitor screen still remains dark after you use the previous procedure, check your video controller and computer system; your monitor is functioning properly.

NO SIGNAL INPUT

If there is something wrong with the input signal, a message appears on the screen although the power indicator LED is still on. The message may indicate that the monitor is NO SIGNAL INPUT or that you need to check the signal cable.



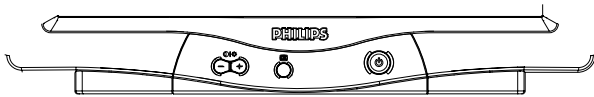
Lock/Unlock, Factory Mode, Burn In, Service Mode

V20 107E5

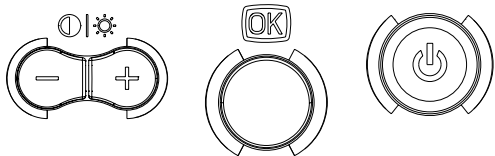
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FrontControl



107E5/S5



- Power button switches your monitor on.
- OK button which when pressed will take you to the OSD controls
- Contrast hotkey. When the "-" button is pressed, the adjustment controls for the CONTRAST will show up.
- Brightness hotkey. When the "+" button is pressed, the adjustment controls for BRIGHTNESS will show up.
- "-" and "+" buttons, are used for adjusting the OSD of your monitor.

OSD Lock

OSD lock is a feature which disables the OSD controls. It can be used when the monitor is set up for demonstration purposes or when adjustment of the OSD is not desirable.

Switch on OSD lock feature:

Press and hold the OK button continuously for 15 seconds. Release the button when the message "CONTROL MENU IS LOCKED" appears.



Switch off OSD lock feature:

Press and hold the OK button continuously for 15 seconds or until the message window "CONTROL MENU IS LOCKED" disappears, and "MAIN CONTROLS" appears.



Default setting of MODEL SELECT (Do not change it.)

MODEL SELECT		
<input checked="" type="checkbox"/>	107E5	ORION
<input type="checkbox"/>	107E5	NORMAL
<input type="checkbox"/>	RESERVE	RESERVE
<input type="checkbox"/>	RESERVE	RESERVE
<input type="checkbox"/>	SWDDC	

To access factory mode

- Turn off monitor (don't turn off PC)
- Press " " and " " simultaneously on the front control panel, then press " ", wait till the OSD menu with characters V20 107E5 V0.20 20021217 (below OSD menu) come on the screen of monitor.

Factory Mode Indicator



- If OSD menu disappears on the screen of monitor, press " " again (anytime), then the OSD menu comes on the screen again.
- Using " " : to select OSD menu.
- Using " " : to increase or decrease the setting.
- Using " " to access/confirm the selection.

To leave factory mode

- After alignment of factory mode, turn off monitor (if you do not turn off monitor, the OSD menu is always at the factory mode), then turn on monitor again (at this moment, the OSD menu goes back to user mode).

To access BURN IN mode

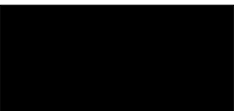
First of all, monitor displays an image.

- Disconnect the video cable (interface cable).
- Turn off monitor
- Press " " and " " simultaneously on the front control panel, then the BURN IN mode comes on the screen of monitor as below.

50 seconds around



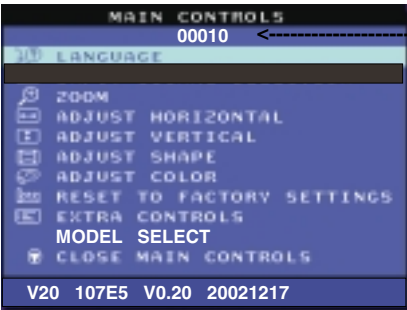
5 seconds around



repeatedly

- Reconnect the video cable, then return to normal image.

SERVICE MODE (Indication-Factory mode)



- 00010: stands for
- using 10 hours already.
 - turn on/off 10 times.
 - using several hours + turn on/off monitor.

Warning and Notes

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Warnings

1. Safety regulations require that the unit should be returned in its original condition and that components identical to the original components are used. The safety components are indicated by the symbol ▲.
2. In order to prevent damage to ICs and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is 0 V (after approximately 30 seconds).
3. **ESD** ▲
All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten their life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the ground of the unit. Keep components and tools also at this same potential.
4. When repairing a unit, always connect it to the AC Power voltage via an isolating transformer.
5. Be careful when taking measurements in the high-voltage section and on the picture tube panel.
6. It is recommended that safety goggles be worn when replacing the picture tube.
7. When making adjustments, use plastic rather than metal tools. This will prevent any short-circuit or the danger of a circuit becoming unstable.
8. Never replace modules or other components while the unit is switched on.
9. Together with the deflection unit, the picture tube is used as an integrated unit. Adjustment of this unit during repair is not recommended.
10. After repair, the wiring should be fastened in place with the cable clamps.
11. All units that are returned for service or repair must pass the original manufacturer's safety tests.

Notes

1. The direct voltages and waveforms are average voltages. They have been measured using the Service test software and under the following conditions :
 - Mode : 640 * 480 (31.5kHz / 60Hz)
 - Signal pattern : grey scale
 - Adjust brightness and contrast control for the mechanical mid-position (click position)
2. The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
3. The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

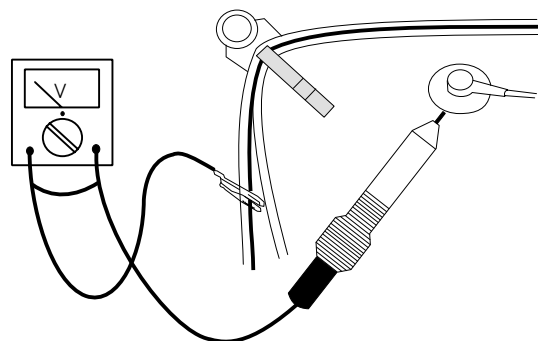


Fig.1

0. General

To be able to perform measurements and repairs on the "circuit boards", these unit should placed in the service position first.

1. Remove the rear cover in Fig. 1.

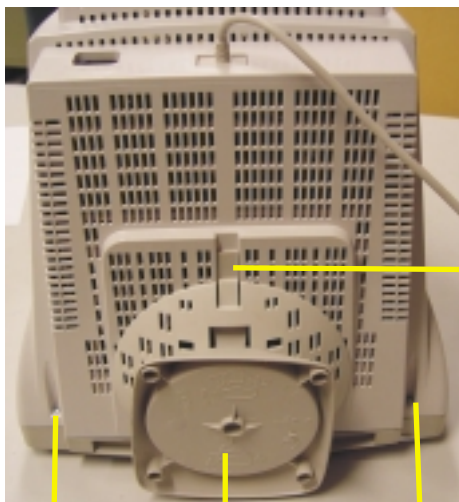
- Remove 2 screws as shown
- Remove back cover as shown
- Remove pedestal as shown

2. Video panel

- Disconnect the wire between metal shield of Video panel and CRT neck as shown in Fig. 2.
- Disconnect the CRT ground "1703" from Video panel.
- Remove screw grounding and grounding wire in Fig. 3.

3. Main board connector in Fig. 4

- Disconnect york wire from "1601"
- Disconnect rotation connector "1401"
- Disconnect control board connector "1803"
- Remove Screw for fixed I/F cable
- Remove signal connector "1802"
- Remove degaussing wire connector "1103"



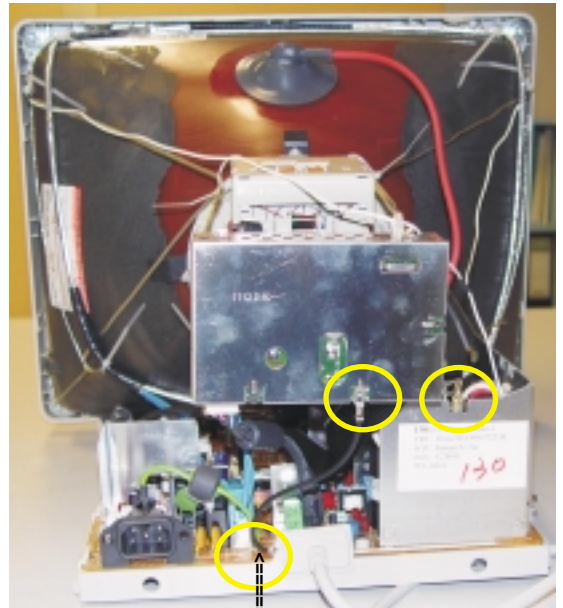
Pedestal ass'y

Screw

Screw

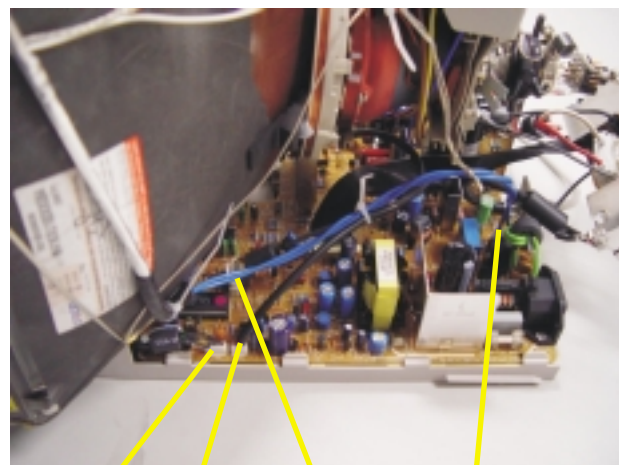
Fig. 1

Clip



screw - grounding

Fig. 3



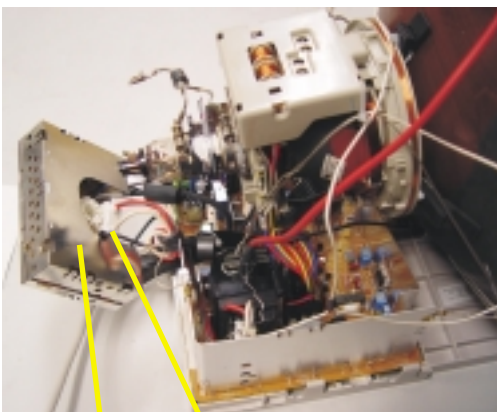
Control connector

Rotation connector

Signal connector

Degaussing wire connector

Fig. 4



CRT ground wire

Video Panel

Fig. 2

Mechanical Instructions

Go to cover page

4. Main panel with Bottom Tray

- Remove 2 screws for disconnect the Bottom tray as Fig. 5.
- Pull the bottom tray on press right and left side clip from fig. 6 to fig. 7.

5. SERVICE POSITION

Reconnect connectors, some wires and panels (chassis), service position can be available for DC/AC measurement as shown in Fig. 8.

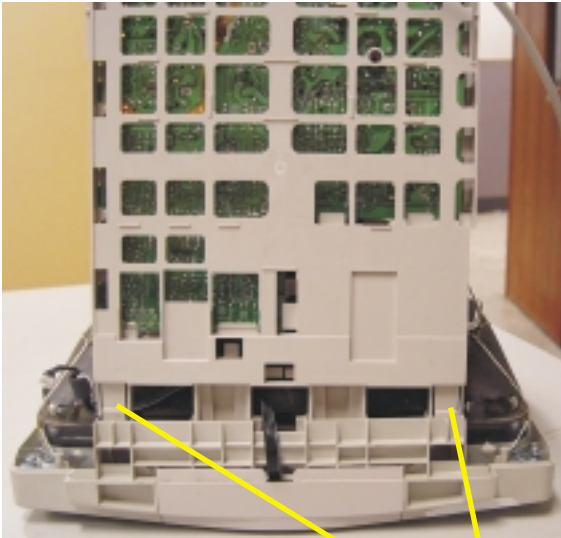


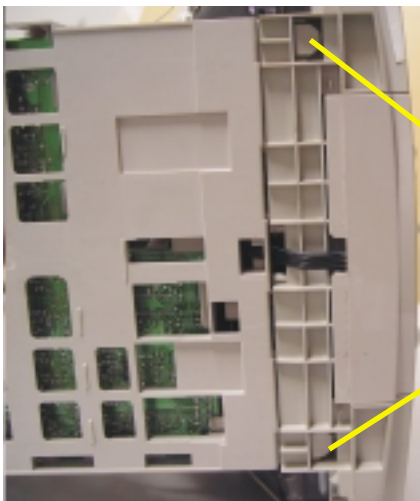
Fig. 7

Pull-up



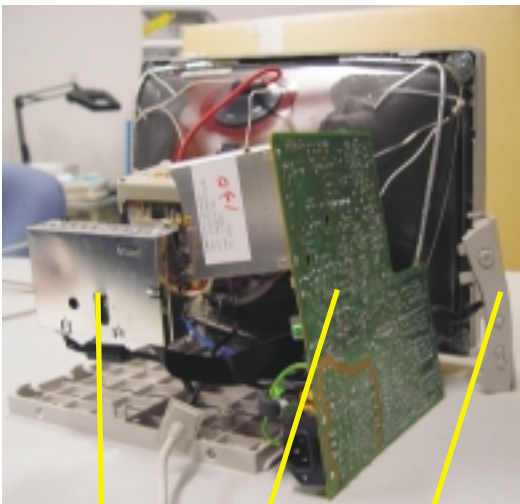
Screw

Fig. 5



Press CLIP

Fig. 6

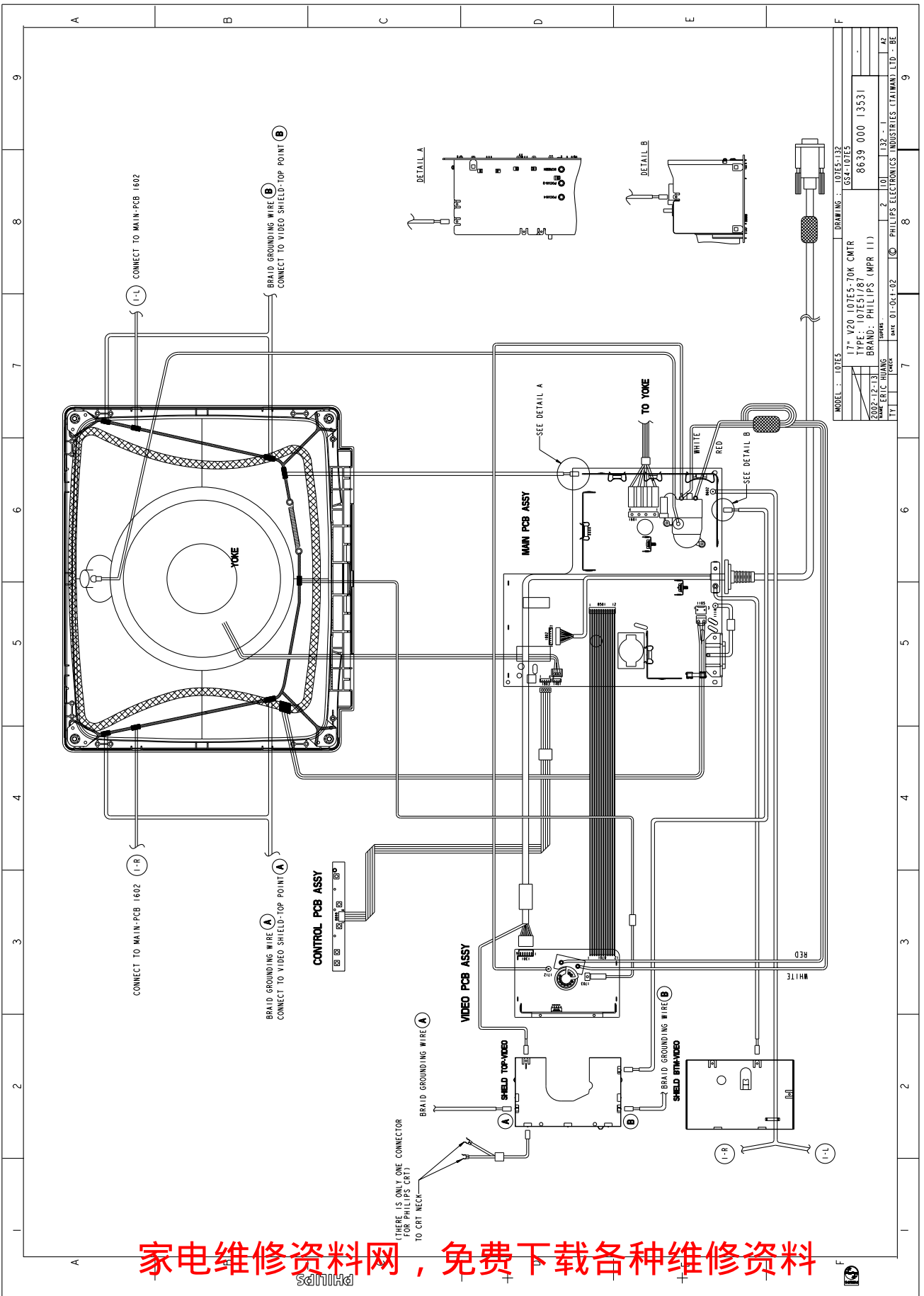


Video panel

Main panel

Front control panel

Fig. 8 SERVICE POSITION



Hex Data of DDC2B

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107E5 Orion Tube EDID log file

Vendor/Product Identification
ID Manufacturer Name : PHL
ID Product Code : 000D(HEX.)
ID Serial Number : 4D2 (HEX.)
Week of Manufacture : 42
Year of Manufacture : 2002
EDID Version, Revision
Version : 1
Revision : 3
Basic Display Parameters/Features
Video Input Definition : Analog Video Input
0.700V/0.000V (0.70Vpp)
without Blank-to-Black Setup
Separate Sync
without Composite Sync
without Sync on Green
no Serration required
Maximum H Image Size : 31
Maximum V Image Size : 23
Display Transfer Characteristic : 2.98
(gamma)
Feature Support (DPMS): Standby
Suspend
Active Off
Display Type : RGB color display
Color Characteristics
Red X coordinate : 0.645
Red Y coordinate : 0.322
Green X coordinate : 0.278
Green Y coordinate : 0.602
Blue X coordinate : 0.142
Blue Y coordinate : 0.06
White X coordinate : 0.283
White Y coordinate : 0.297
Established Timings
Established Timings I : 720 x 400 @70Hz (IBM,VGA)
640 x 480 @60Hz (IBM,VGA)
640 x 480 @72Hz (VESA)
640 x 480 @75Hz (VESA)
800 x 600 @60Hz (VESA)
Established Timings II : 800 x 600 @72Hz (VESA)
800 x 600 @75Hz (VESA)
832 x 624 @75Hz (Apple,Mac II)
1024 x 768 @60Hz (VESA)
1024 x 768 @70Hz (VESA)
1024 x 768 @75Hz (VESA)
Manufacturer's timings :
Standard Timing Identification #1
Horizontal active pixels : 640
Aspect Ratio : 4:3
Refresh Rate : 85
Standard Timing Identification #2
Horizontal active pixels : 800
Aspect Ratio : 4:3
Refresh Rate : 85
Standard Timing Identification #3
Horizontal active pixels : 1024
Aspect Ratio : 4:3
Refresh Rate : 85
Standard Timing Identification #4
Horizontal active pixels : 1280
Aspect Ratio : 5:4
Refresh Rate : 60
Standard Timing Identification #5
Horizontal active pixels : 640
Aspect Ratio : 4:3
Refresh Rate : 100

Standard Timing Identification #6
Horizontal active pixels : 800
Aspect Ratio : 4:3
Refresh Rate : 100
Standard Timing Identification #7
Horizontal active pixels : 1280
Aspect Ratio : 4:3
Refresh Rate : 60
Standard Timing Identification #8
Horizontal active pixels : 1152
Aspect Ratio : 4:3
Refresh Rate : 75
Detailed Timing #1
Pixel Clock (MHz) : 25.18
H Active (pixels) : 640
H Blanking (pixels) : 160
V Active (lines) : 350
V Blanking (lines) : 99
H Sync Offset (F Porch) (pixels): 16
H Sync Pulse Width (pixels): 96
V Sync Offset (F Porch) (lines) : 37
V Sync Pulse Width (lines) : 2
H Image Size (mm) : 306
V Image Size (mm) : 230
H Border (pixels) : 0
V Border (lines) : 0
Flags : Non-interlaced
: Normal Display, No stereo
: Digital Separate sync.
: Negative Vertical Sync.
: Positive Horizontal Sync.
Monitor Descriptor #2
Serial Number : TY 123456
Monitor Descriptor #3
Monitor Name : PHILIPS 107E5
Monitor Descriptor #4
Monitor Range Limits
Min. Vt rate Hz : 50
Max. Vt rate Hz : 160
Min. Horiz. rate kHz : 30
Max. Horiz. rate kHz : 71
Max. Supported Pixel : 110
No secondary GTF timing formula supported.
Extension Flag : 0
Check sum : 99 (HEX.)

107E5 Orion EDID data (128 bytes)

0: 00 1: ff 2: ff 3: ff 4: ff 5: ff 6: ff 7: 00
8: 41 9: 0c 10: 0d 11: 00 12: d2 13: 04 14: 00 15: 00
16: 2a 17: 0c 18: 01 19: 03 20: 08 21: 1f 22: 17 23: c6
24: e8 25: 24 26: 58 27: a5 28: 52 29: 47 30: 9a 31: 24
32: 0f 33: 48 34: 4c 35: ad 36: ee 37: 00 38: 31 39: 59
40: 45 41: 59 42: 61 43: 59 44: 81 45: 80 46: 31 47: 68
48: 45 49: 68 50: 81 51: 40 52: 71 53: 4f 54: d6 55: 09
56: 80 57: a0 58: 20 59: 5e 60: 63 61: 10 62: 10 63: 60
64: 52 65: 08 66: 32 67: e6 68: 10 69: 00 70: 00 71: 1a
72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59
80: 20 81: 20 82: 31 83: 32 84: 33 85: 34 86: 35 87: 36
88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50
96: 48 97: 49 98: 4c 99: 49 100: 50 101: 53 102: 20 103: 31
104: 30 105: 37 106: 45 107: 35 108: 00 109: 00 110: 00 111: fd
112: 00 113: 32 114: a0 115: 1e 116: 47 117: 0b 118: 00 119: 0a
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: 99
Address 78&79 factory code:
Brazil HC(48h,43h) Chungli TY(54h,59h)
Juarez YA(59h,41h) Shenzshen CX(43h,58h)
Suzhou BZ(42h,5Ah) Szombathely HD(48h,44h)

Hex Data of DDC2B

***** 107E5 LG Tube EDID log file *****		Standard Timing Identification #6 Horizontal active pixels : 800 Aspect Ratio : 4:3 Refresh Rate : 100	
Vendor/Product Identification ID Manufacturer Name : PHL ID Product Code : 000D (HEX.) ID Serial Number : 4D2 (HEX.) Week of Manufacture : 42 Year of Manufacture : 2002		Standard Timing Identification #7 Horizontal active pixels : 1280 Aspect Ratio : 4:3 Refresh Rate : 60	
EDID Version, Revision Version : 1 Revision : 3		Standard Timing Identification #8 Horizontal active pixels : 1152 Aspect Ratio : 4:3 Refresh Rate : 75	
Basic Display Parameters/Features Video Input Definition : Analog Video Input 0.700V/0.000V (0.70Vpp) without Blank-to-Black Setup Separate Sync without Composite Sync without Sync on Green no Serration required Maximum H Image Size : 31 Maximum V Image Size : 23 Display Transfer Characteristic : 2.83 (gamma) Feature Support (DPMS) : Standby Suspend Active Off		Detailed Timing #1 Pixel Clock (MHz) : 25.18 H Active (pixels) : 640 H Blanking (pixels) : 160 V Active (lines) : 350 V Blanking (lines) : 99 H Sync Offset (F Porch) (pixels): 16 H Sync Pulse Width (pixels): 96 V Sync Offset (F Porch) (lines): 37 V Sync Pulse Width (lines): 2 H Image Size (mm) : 306 V Image Size (mm) : 230 H Border (pixels) : 0 V Border (lines) : 0 Flags : Non-interlaced : Normal Display, No stereo : Digital Separate sync. : Negative Vertical Sync. : Positive Horizontal Sync.	
Display Type : RGB color display		Monitor Descriptor #2 Serial Number : TY 123456	
Color Characteristics Red X coordinate : 0.632 Red Y coordinate : 0.33 Green X coordinate : 0.273 Green Y coordinate : 0.605 Blue X coordinate : 0.142 Blue Y coordinate : 0.063 White X coordinate : 0.283 White Y coordinate : 0.297		Monitor Descriptor #3 Monitor Name : PHILIPS 107E5	
Established Timings Established Timings I : 720 x 400 @70Hz (IBM,VGA) 640 x 480 @60Hz (IBM,VGA) 640 x 480 @72Hz (VESA) 640 x 480 @75Hz (VESA) 800 x 600 @60Hz (VESA) Established Timings II : 800 x 600 @72Hz (VESA) 800 x 600 @75Hz (VESA) 832 x 624 @75Hz (Apple,Mac II) 1024 x 768 @60Hz (VESA) 1024 x 768 @70Hz (VESA) 1024 x 768 @75Hz (VESA)		Monitor Descriptor #4 Monitor Range Limits Min. Vt rate Hz : 50 Max. Vt rate Hz : 160 Min. Horiz. rate kHz : 30 Max. Horiz. rate kHz : 71 Max. Supported Pixel : 110 No secondary GTF timing formula supported.	
Manufacturer's timings : Standard Timing Identification #1 Horizontal active pixels : 640 Aspect Ratio : 4:3 Refresh Rate : 85		Extension Flag : 0 Check sum : ED(HEX)	
Standard Timing Identification #2 Horizontal active pixels : 800 Aspect Ratio : 4:3 Refresh Rate : 85		***** 107E5 LG EDID data (128 bytes) *****	
Standard Timing Identification #3 Horizontal active pixels : 1024 Aspect Ratio : 4:3 Refresh Rate : 85		0: 00 1: ff 2: ff 3: ff 4: ff 5: ff 6: ff 7: 00 8: 41 9: 0c 10: 0d 11: 00 12: d2 13: 04 14: 00 15: 00 16: 2a 17: 0c 18: 01 19: 03 20: 08 21: 1f 22: 17 23: b7 24: e8 25: e0 26: 58 27: a1 28: 54 29: 46 30: 9b 31: 24 32: 10 33: 48 34: 4c 35: ad 36: ee 37: 00 38: 31 39: 59 40: 45 41: 59 42: 61 43: 59 44: 81 45: 80 46: 31 47: 68 48: 45 49: 68 50: 81 51: 40 52: 71 53: 4f 54: d6 55: 09 56: 80 57: a0 58: 20 59: 5e 60: 63 61: 10 62: 10 63: 60 64: 52 65: 08 66: 32 67: e6 68: 10 69: 00 70: 00 71: 1a 72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59 80: 20 81: 20 82: 31 83: 32 84: 33 85: 34 86: 35 87: 36 88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50 96: 48 97: 49 98: 4c 99: 49 100: 50 101: 53 102: 20 103: 31 104: 30 105: 37 106: 45 107: 35 108: 00 109: 00 110: 00 111: fd 112: 00 113: 32 114: a0 115: 1e 116: 47 117: 0b 118: 00 119: 0a 120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: ed	
Standard Timing Identification #4 Horizontal active pixels : 1280 Aspect Ratio : 5:4 Refresh Rate : 60			
Standard Timing Identification #5 Horizontal active pixels : 640 Aspect Ratio : 4:3 Refresh Rate : 100			

Hex Data of DDC2B

Go to cover page

107E5 CPT Tube EDID log file

Vendor/Product Identification
ID Manufacturer Name : PHL
ID Product Code : 000D(HEX.)
ID Serial Number : 4D2 (HEX.)
Week of Manufacture : 42
Year of Manufacture : 2002
EDID Version, Revision
Version : 1
Revision : 3
Basic Display Parameters/Features
Video Input Definition : Analog Video Input
0.700V/0.000V (0.70Vpp)
without Blank-to-Black Setup
Separate Sync
without Composite Sync
without Sync on Green
no Serration required
Maximum H Image Size : 31
Maximum V Image Size : 23
Display Transfer Characteristic : 2.86
(gamma)
Feature Support (DPMS): Standby
Suspend
Active Off
Display Type : RGB color display
Color Characteristics
Red X coordinate : 0.62
Red Y coordinate : 0.345
Green X coordinate : 0.29
Green Y coordinate : 0.61
Blue X coordinate : 0.155
Blue Y coordinate : 0.065
White X coordinate : 0.283
White Y coordinate : 0.297
Established Timings
Established Timings I : 720 x 400 @70Hz (IBM,VGA)
640 x 480 @60Hz (IBM,VGA)
640 x 480 @72Hz (VESA)
640 x 480 @75Hz (VESA)
800 x 600 @60Hz (VESA)
Established Timings II : 800 x 600 @72Hz (VESA)
800 x 600 @75Hz (VESA)
832 x 624 @75Hz (Apple,Mac II)
1024 x 768 @60Hz (VESA)
1024 x 768 @70Hz (VESA)
1024 x 768 @75Hz (VESA)
Manufacturer's timings :
Standard Timing Identification #1
Horizontal active pixels : 640
Aspect Ratio : 4:3
Refresh Rate : 85
Standard Timing Identification #2
Horizontal active pixels : 800
Aspect Ratio : 4:3
Refresh Rate : 85
Standard Timing Identification #3
Horizontal active pixels : 1024
Aspect Ratio : 4:3
Refresh Rate : 85
Standard Timing Identification #4
Horizontal active pixels : 1280
Aspect Ratio : 5:4
Refresh Rate : 60
Standard Timing Identification #5
Horizontal active pixels : 640
Aspect Ratio : 4:3
Refresh Rate : 100

Standard Timing Identification #6
Horizontal active pixels : 800
Aspect Ratio : 4:3
Refresh Rate : 100
Standard Timing Identification #7
Horizontal active pixels : 1280
Aspect Ratio : 4:3
Refresh Rate : 60
Standard Timing Identification #8
Horizontal active pixels : 1152
Aspect Ratio : 4:3
Refresh Rate : 75
Detailed Timing #1
Pixel Clock (MHz) : 25.18
H Active (pixels) : 640
H Blanking (pixels) : 160
V Active (lines) : 350
V Blanking (lines) : 99
H Sync Offset (F Porch) (pixels): 16
H Sync Pulse Width (pixels): 96
V Sync Offset (F Porch) (lines) : 37
V Sync Pulse Width (lines) : 2
H Image Size (mm) : 306
V Image Size (mm) : 230
H Border (pixels) : 0
V Border (lines) : 0
Flags : Non-interlaced
: Normal Display, No stereo
: Digital Separate sync.
: Negative Vertical Sync.
: Positive Horizontal Sync.
Monitor Descriptor #2
Serial Number : TY 123456
Monitor Descriptor #3
Monitor Name : PHILIPS 107E5
Monitor Descriptor #4
Monitor Range Limits
Min. Vt rate Hz : 50
Max. Vt rate Hz : 160
Min. Horiz. rate kHz : 30
Max. Horiz. rate kHz : 71
Max. Supported Pixel : 110
No secondary GTF timing formula supported.
Extension Flag : 0
Check sum : 4C (HEX.)

107E5 CPT EDID data (128 bytes)

0: 00 1: ff 2: ff 3: ff 4: ff 5: ff 6: ff 7: 00
8: 41 9: 0c 10: 0d 11: 00 12: d2 13: 04 14: 00 15: 00
16: 2a 17: 0c 18: 01 19: 03 20: 08 21: 1f 22: 17 23: ba
24: e8 25: d5 26: f8 27: 9e 28: 58 29: 4a 30: 9c 31: 27
32: 10 33: 48 34: 4c 35: ad 36: ee 37: 00 38: 31 39: 59
40: 45 41: 59 42: 61 43: 59 44: 81 45: 80 46: 31 47: 68
48: 45 49: 68 50: 81 51: 40 52: 71 53: 4f 54: d6 55: 09
56: 80 57: a0 58: 20 59: 5e 60: 63 61: 10 62: 10 63: 60
64: 52 65: 08 66: 32 67: e6 68: 10 69: 00 70: 00 71: 1a
72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59
80: 20 81: 20 82: 31 83: 32 84: 33 85: 34 86: 35 87: 36
88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50
96: 48 97: 49 98: 4c 99: 49 100: 50 101: 53 102: 20 103: 31
104: 30 105: 37 106: 45 107: 35 108: 00 109: 00 110: 00 111: fd
112: 00 113: 32 114: a0 115: 1e 116: 47 117: 0b 118: 00 119: 0a
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: 4c

Hex Data of DDC2B (Continued)

V20 107E5

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***** 107E5 Philips Tube EDID log file *****		Standard Timing Identification #6	
Vendor/Product Identification		Horizontal active pixels : 800	
ID Manufacturer Name : PHL		Aspect Ratio : 4:3	
ID Product Code : 000D (HEX.)		Refresh Rate : 100	
ID Serial Number : 4D2 (HEX.)		Standard Timing Identification #7	
Week of Manufacture : 42		Horizontal active pixels : 1280	
Year of Manufacture : 2002		Aspect Ratio : 4:3	
EDID Version, Revision		Refresh Rate : 60	
Version : 1		Standard Timing Identification #8	
Revision : 3		Horizontal active pixels : 1152	
Basic Display Parameters/Features		Aspect Ratio : 4:3	
Video Input Definition : Analog Video Input		Refresh Rate : 75	
0.700V/0.000V (0.70Vpp)		Detailed Timing #1	
without Blank-to-Black Setup		Pixel Clock (MHz) : 25.18	
Separate Sync		H Active (pixels) : 640	
without Composite Sync		H Blanking (pixels) : 160	
without Sync on Green		V Active (lines) : 350	
no Serration required		V Blanking (lines) : 99	
Maximum H Image Size : 31		H Sync Offset (F Porch) (pixels): 16	
Maximum V Image Size : 23		H Sync Pulse Width (pixels): 96	
Display Transfer Characteristic : 2.87		V Sync Offset (F Porch) (lines): 37	
(gamma)		V Sync Pulse Width (lines): 2	
Feature Support (DPMS) : Standby		H Image Size (mm) : 306	
Suspend		V Image Size (mm) : 230	
Active Off		H Border (pixels) : 0	
Display Type : RGB color display		V Border (lines) : 0	
Color Characteristics		Flags : Non-interlaced	
Red X coordinate : 0.62		: Normal Display, No stereo	
Red Y coordinate : 0.345		: Digital Separate sync.	
Green X coordinate : 0.29		: Negative Vertical Sync.	
Green Y coordinate : 0.61		: Positive Horizontal Sync.	
Blue X coordinate : 0.15		Monitor Descriptor #2	
Blue Y coordinate : 0.065		Serial Number : TY 123456	
White X coordinate : 0.283		Monitor Descriptor #3	
White Y coordinate : 0.297		Monitor Name : PHILIPS 107E5	
Established Timings		Monitor Descriptor #4	
Established Timings I : 720 x 400 @ 70Hz (IBM,VGA)		Monitor Range Limits	
640 x 480 @ 60Hz (IBM,VGA)		Min. Vt rate Hz : 50	
640 x 480 @ 72Hz (VESA)		Max. Vt rate Hz : 160	
640 x 480 @ 75Hz (VESA)		Min. Horiz. rate kHz : 30	
800 x 600 @ 60Hz (VESA)		Max. Horiz. rate kHz : 71	
Established Timings II : 800 x 600 @ 72Hz (VESA)		Max. Supported Pixel : 110	
800 x 600 @ 75Hz (VESA)		No secondary GTF timing formula supported.	
832 x 624 @ 75Hz (Apple,Mac II)		Extension Flag : 0	
1024 x 768 @ 60Hz (VESA)		Check sum : 7B (HEX.)	
1024 x 768 @ 70Hz (VESA)		*****	
1024 x 768 @ 75Hz (VESA)		107E5 PHI EDID data (128 bytes)	
Manufacturer's timings :		*****	
Standard Timing Identification #1		0: 00 1: ff 2: ff 3: ff 4: ff 5: ff 6: ff 7: 00	
Horizontal active pixels : 640		8: 41 9: 0c 10: 0d 11: 00 12: d2 13: 04 14: 00 15: 00	
Aspect Ratio : 4:3		16: 2a 17: 0c 18: 01 19: 03 20: 08 21: 1f 22: 17 23: bb	
Refresh Rate : 85		24: e8 25: e5 26: b8 27: 9e 28: 59 29: 4a 30: 9c 31: 26	
Standard Timing Identification #2		32: 10 33: 48 34: 4c 35: ad 36: ee 37: 00 38: 31 39: 59	
Horizontal active pixels : 800		40: 45 41: 59 42: 61 43: 59 44: 81 45: 80 46: 31 47: 68	
Aspect Ratio : 4:3		48: 45 49: 68 50: 81 51: 40 52: 71 53: 4f 54: d6 55: 09	
Refresh Rate : 85		56: 80 57: a0 58: 20 59: 5e 60: 63 61: 10 62: 10 63: 60	
Standard Timing Identification #3		64: 52 65: 08 66: 32 67: e6 68: 10 69: 00 70: 00 71: 1a	
Horizontal active pixels : 1024		72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59	
Aspect Ratio : 4:3		80: 20 81: 20 82: 31 83: 32 84: 33 85: 34 86: 35 87: 36	
Refresh Rate : 85		88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50	
Standard Timing Identification #4		96: 48 97: 49 98: 4c 99: 49 100: 50 101: 53 102: 20 103: 31	
Horizontal active pixels : 1280		104: 30 105: 37 106: 45 107: 35 108: 00 109: 00 110: 00 111: fd	
Aspect Ratio : 5:4		112: 00 113: 32 114: a0 115: 1e 116: 47 117: 0b 118: 00 119: 0a	
Refresh Rate : 60		120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: 7b	
Standard Timing Identification #5			
Horizontal active pixels : 640			
Aspect Ratio : 4:3			
Refresh Rate : 100			

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1. General

DDC Data Re-programming

In case the main EEPROM with Software DDC which store all factory settings were replaced because a defect, repaired monitor the serial numbers have to be re-programmed.

It is advised to re-soldered the main EEPROM with Software DDC from the old board onto the new board if circuit board have been replaced, in this case the DDC data does not need to be re-programmed.

Additional information

Additional information about DDC (Display Data Channel) may be obtained from Video Electronics Standards Association (VESA). Extended Display Identification Data(EDID) information may be also obtained from VESA.

DDC EDID structure
For the monitor : Standard Version 3.0
Structure Version 1.2

2. System and equipment requirements

- 1. An i486 (or above) personal computer or compatible.
 - 2. Microsoft operation system Windows 95/98.
 - 3. EDID301.EXE program (3138 106 10103) shown as Fig. 1
 - 4. Software DDC Alignment kits (4822 310 11184) shown as Fig. 2.
- The kit contents: a. Alignment box x1
b. Printer cable x1
c. D-Sub cable x1

Note: The EDID301.EXE (Release Version 1.58, 20000818) is a windows-based program, which cannot be run in MS-DOS.



Figure 1 Diskette with EDID301.EXE

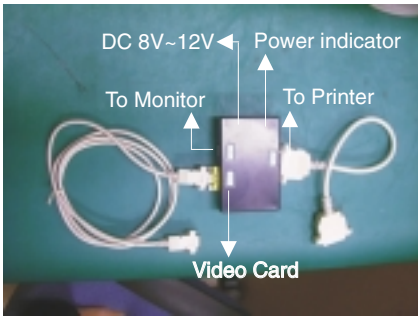
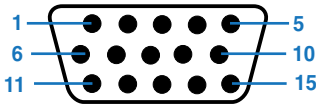


Fig. 2 Alignment Kits

3. Pin assignment

A. 15-pin D-Sub Connector

The 15-pin D-sub connector (male) of the signal cable on the 3rd row for DDC feature :



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	DDC 5V
2	Green video input	10	Sync. Ground
3	Blue video input	11	Ground
4	Ground	12	Bi-directional data(SDA)
5	for selftest(PC ground)	13	H.Sync
6	Red video ground	14	V.Sync(VCLK)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

DDC Instructions (Continued)

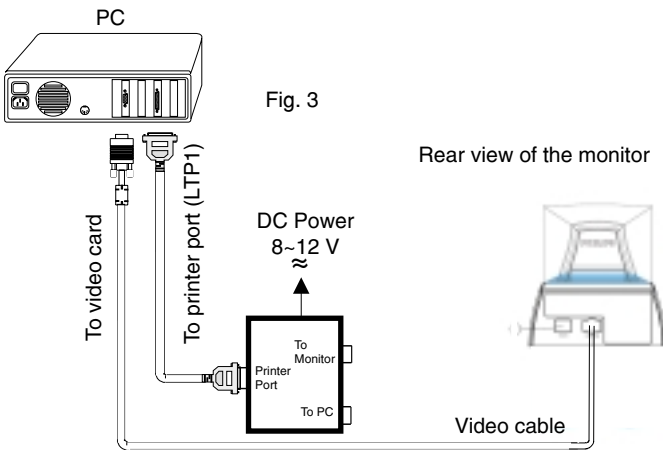
4. Configuration and procedure

There is no Hardware DDC (DDC IC) anymore. Main EEPROM stores all factory settings and DDC data (EDID code) which is so called Software DDC. The following section describes the connection and procedure for Software DDC application. The main EEPROM can be re-programmed by enabling "factory memory data write" function on the DDC program (EDID301.EXE).

*** INITIALIZE ALIGNMENT BOX ***

In order to avoid that monitor entering power saving mode due to sync will cut off by alignment box, it is necessary to initialize alignment box before re-programming DDC Data. Following steps show you the procedures and connection.

- Step 1: Supply 8~12V DC power source to the Alignment box by plugging a DC power cord or using batteries.
- Step 2: Connecting printer cable and video cable of monitor as shown in Fig.3.



Step 3: Installation of EDID301.EXE

Method 1: Start on DDC program

- Start Microsoft Windows.
- 1. Insert the disk containing EDID301.EXE program into floppy disk drive.
- 2. Click Start, choose Run at start menu of Windows 95/98 as shown in Fig. 4.

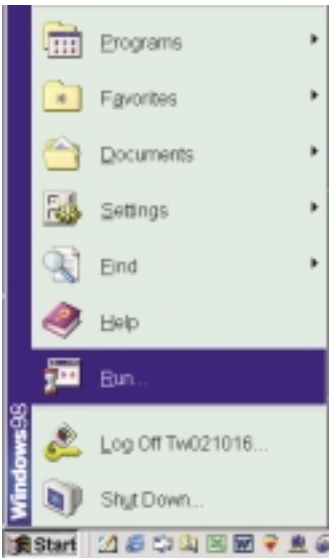


Fig. 4

- 3. At the submenu, type the letter of your computer's floppy disk drive followed by :EDID301 (for example, A:\EDID301, as shown in Fig. 5).

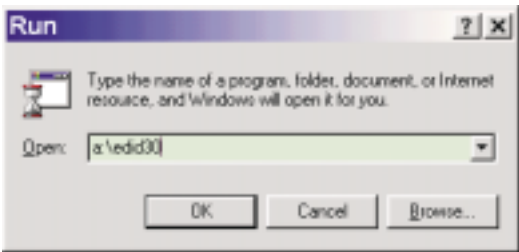


Fig. 5

- 4. Click OK button. The main menu appears (as shown in Fig. 6). This is for initialize alignment box.

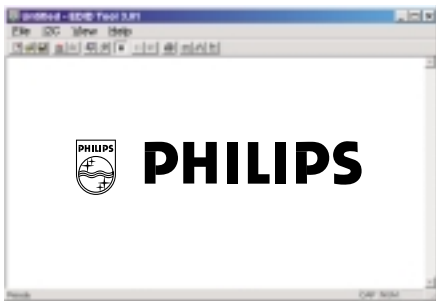


Fig. 6

Note 1: If the connection is improper, you will see the following error message (as shown in Fig. 7) before entering the main menu. Meanwhile, the (read EDID) function will be disable. At this time, please make sure all cables are connected correctly and fixedly, and the procedure has been performed properly.



Fig. 7

Method 2: After create a shortcut of EDID301.EXE

- : Double click EDID301 icon (as shown in Fig. 8) which is on the screen of Windows Wallpaper. Bring up main menu of EDID301 as shown in Fig. 9. This is for initialize alignment box.



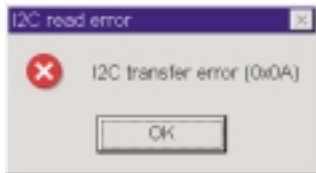
Fig. 8



Fig. 9

Note 2: During the loading, EDID301 will verify the EDID data which just loaded from monitor before proceed any further function, once the data structure of EDID can not be recognized, the following error message will appear on the screen as below. Please confirm following steps to avoid this message.

- 1. The data structure of EDID was incorrect.
- 2. DDC IC that you are trying to load data is empty.
- 3. Wrong communication channel has set at configuration setup windows.
- 4. Cables loosed or poor contact of connection.



DDC Instructions (Continued)

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Re-programming EEPROM (Software DDC)

Step 1: After initialize alignment box, connecting all cables and box as shown in Fig. 10

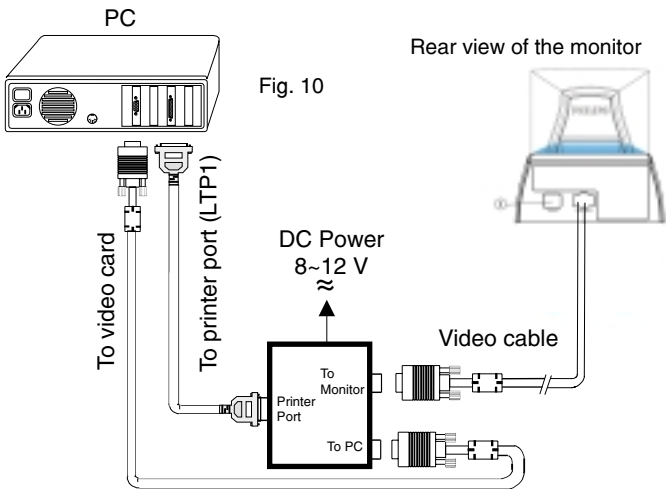


Fig. 10

Step 2: Read DDC data from monitor

- 1-1 Click the left key of Mouse, or hit any key on the keyboard, then the characters disappear from the screen.
- 1-2 Click icon as shown if Fig. 11 from the tool bar to bring up the "Configuration Setup" windows as shown in Fig. 12.



Fig. 11

- 2. Select the DDC2B as the communication channel. Select "Enable" & fill out "F0" for Mapped EDID page address as shown in Fig. 12.

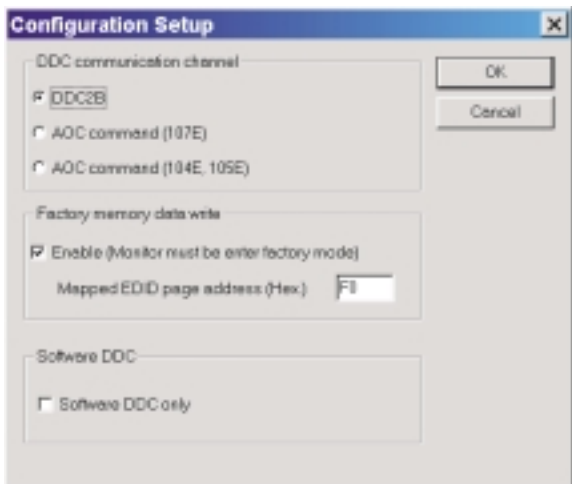


Fig. 12

- 3. Click OK button to confirm your selection.

- 4. Click icon (Read EDID function) to read DDC EDID data from monitor. The EDID codes will display on screen as shown in Fig. 13.



Fig. 13

Step 3: Modify DDC data (verify EDID version, week, year)

- 1. Click icon (new function) from the tool bar, bring up Step 1 of 9 as shown in Fig. 14 . EDID301 DDC application provides the function selection and text change (select & fill out) from Step 1 to Step 9.

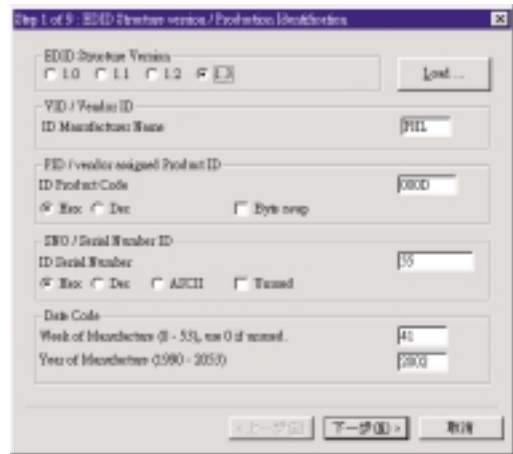


Fig. 14

Step 4: Modify DDC data (Monitor Serial No.)

- 1. Click Next till the Step 7 of 9 window appears as shown in Fig. 15.
- 2. Fill out the new Serial No. (for example, TY 503960, TY 123456).
- 3. Click Next till the last step window appears, then click Finish to exit the Step window.

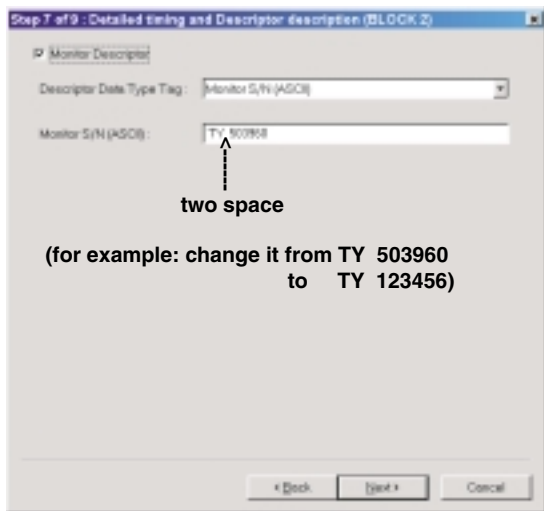


Fig. 15


Definition of Serial Number (barcode format)

TY 00 02 41 00 00 01

- Serial Number (U.S.A.: 8 digit) (Others regions: 6 digit)
- Week
- Year
- TY Code
 - TY----Chungli
 - CX----Dong Guan
 - HD----Hungary
 - BZ----Suzhou

DDC Instructions (Continued)

Step 5: **Configuration Setup & Enter Factory Mode **
for "write EDID data"

1. Click  icon from the tool bar to bring up the Configuration Setup windows again. Then, select "Software DDC only" as shown in Fig. 16. Click "OK".

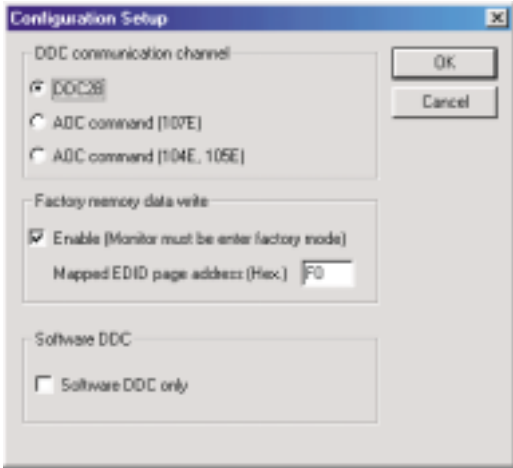
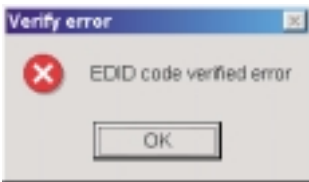


Fig. 16

If you do not select "Software DDC only", when you execute "write EDID", it will bring up an error message as below.



To access factory mode

1. Turn off monitor (don't turn off PC)
2. Press " " and " " simultaneously on the front control panel, then press " ", wait till the OSD menu with characters V20 107E5 V0.20 20021217 (below OSD menu)" come on the screen of monitor.

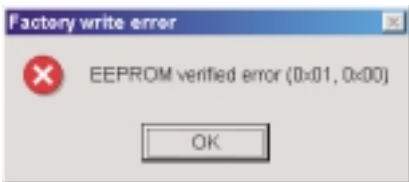
Fig. 17

Factory Mode Indicator





If OSD menu disappears on the screen of monitor, press " " again (anytime), then the OSD menu comes on the screen again.






If you do not access "Factory mode", when you execute "write EDID", it will bring up an error message as below.



Step 6: Write DDC data

1. Click  (Write EDID) icon from the tool bar to write DDC data. Bring up "Writing 0%~100%, ready" a progressing bar on the left down corner.
2. Click  (Read EDID) to confirm it.

Step 7: Confirm Serial Number in User Mode

1. Press the  button to turn off the monitor. Press the  button again to turn on the monitor.
2. Press the  button to bring up the OSD Main Menu.
3. Press the  button to select Extra Controls, press the  button to confirm your selection.
4. Confirm the Serial Number "123456" is updated as shown in Fig. 18.

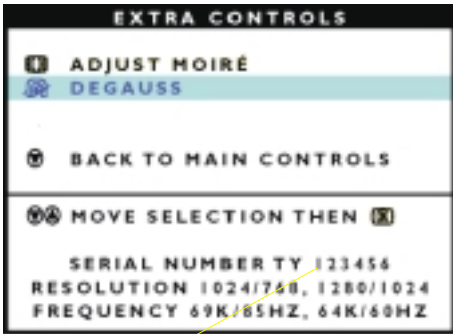



Fig. 18

Step 8: Save DDC data

Sometimes, you may need to save DDC data as a text file for using in other IC chip. To save DDC data, follow the steps below:

1. Click  (Save) icon (or click "file"-> "save as") from the tool bar and give a file name as shown in Fig. 19. The file type is EDID301 file (*.ddc) which can be open in WordPad. By using WordPad, the texts of DDC data & table (128 bytes, hex code) can be modified. If DDC TEXTS & HEX Table are completely correct, it can be saved as .ddc file to re-load it into EEPROM for DDC Data application.

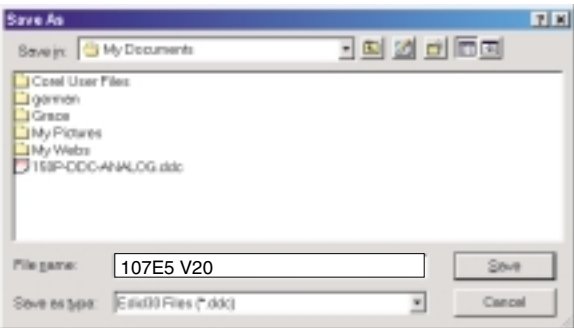




Fig. 19

2. Click **Save**.

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Step 9: Load DDC data

- 1. Click  from the tool bar.
- 2. Select the file you want to open as shown in Fig. 20.
- 3. Click **Open**.
- 4. Access "Factory Mode" and enable "Software DDC only" as shown in Fig. 17 & Fig. 16.
- 5. Write EDID (click ).

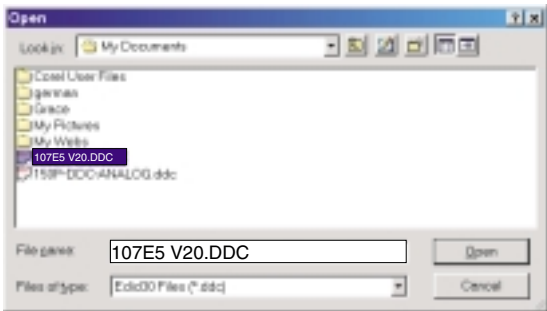


Fig. 20

Note 2 : In Factory Mode: Read/Write DDC data
Before Read/Write EDID code, please confirm that the **Software DDC only was enabled** as shown in Fig. 23.

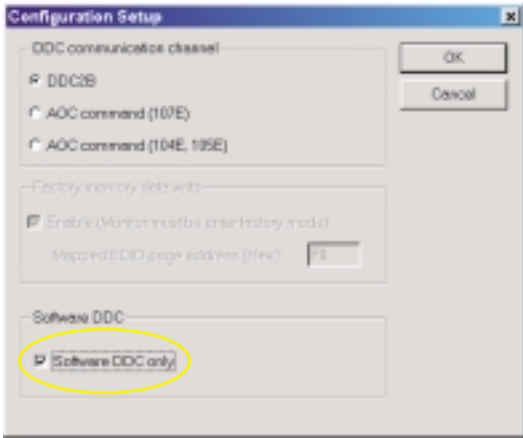


Fig. 23

Step 10: Exit DDC program

Pull down the File menu and select Exit as shown in Fig. 21.
(EDID Tool 3.01)

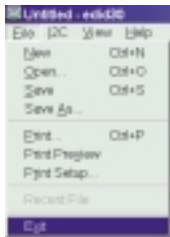


Fig. 21

Note1 : In User Mode: Read DDC data only
Before read EDID code, please confirm that the **Software DDC only was disabled** as shown in Fig. 22.

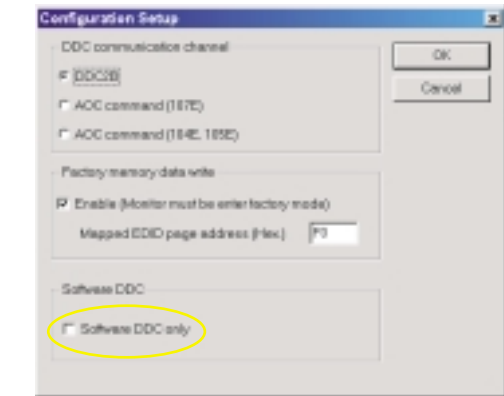


Fig. 22

If you do not disable "Software DDC only", when you execute "read EDID", it will bring up an error message as below.



Electrical Adjustments

V20 107E5

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0. General

1. This monitor has **8 factory-preset modes** as below.

720 x 400 31.5 kHz/70 Hz
640 x 480 31.5 kHz/60 Hz
640 x 480 43.3 kHz/85 Hz
800 x 600 46.9 kHz/75 Hz
800 x 600 53.6 kHz/85 Hz
1280 x 960 60.0 kHz/60 Hz
1024 x 768 68.7 kHz/85 Hz
1280 x 1024 64.0kHz/60Hz

1.1 14 factory-preload modes as below

640 x 350 31.5 kHz/70 Hz
640 x 350 37.9 kHz/85 Hz
640 x 480 37.5 kHz/75 Hz
640 x 480 37.9 kHz/72.8 Hz
640 x 480 50.6 kHz/100 Hz
720 x 400 37.9 kHz/85 Hz
800 x 600 37.9kHz/60Hz
800 x 600 48.1 kHz/72 Hz
800 x 600 63.9 kHz/100 Hz
832 x 624 49.7 kHz/75 Hz
1024 x 768 48.4 kHz/60 Hz
1024 x 768 56.5 kHz/70 Hz
1152 x 864 67.5 kHz/75 Hz
1024x768 60.0 kHz/75 Hz

2. AC/DC Measurement:

The measurements for AC waveform and DC figure is based on 640 x 480 31.5 kHz/60 Hz resolution mode with test pattern "gray scale".
Power input: 110V AC

3. Monitor the following auxiliary voltages.

+5V	source across 7153 Pin out and GND	+5V	+/- 0.25 VDC
+6.1V	source across C2154	+6.1V	+/- 0.3 VDC
+12V	source across C2155	+12.9V	+/- 1.0 VDC
-12V	source across C2156	-12.7V	+/- 1.0 VDC
+50V	source across C2152	+50V	+/- 1.0 VDC
-190V	source across C2630	-173V	+/- 10.0 VDC
+83V	source across C2153 (+ to Gnd)	+76V	+/- 2.0 VDC

4. General conditions for alignment

- 4.1 During all alignments, supply a distortion free AC mains voltage to set via an isolating transformer with low internal impedance.
- 4.2 Align in pre-warmed condition, at least 30 minutes warm-up with nominal picture brightness.
- 4.3 Purity, geometry and subsequent alignments should be carried out in magnetic cage with correct magnetic field.

Northern hemisphere : H=0, V=450 mG, Z=0
Southern hemisphere : H=0, V=-500 mG, Z=0
Equatorial Support : H=0, V=0 mG, Z=0

- 4.4 All voltages are to be measured or applied with respect to ground.
Note: Do not use heatsink as ground.
- 4.5 Adjust brightness controls to center position except for contrast control which should be set to MAX.

5. To access factory mode

- 5.1 Turn off monitor (don't turn off PC)
- 5.2 Press " " and " " simultaneously on the front control panel, then press " ", wait till the OSD menu with characters M32 107E/T4P V1.23 20020426 (below OSD menu)" come on the screen of monitor.



- 5.3 If OSD menu disappears on the screen of monitor, press " " again (anytime), then the OSD menu comes on the screen again.
- 5.4 Using " " : to select OSD menu.
- 5.5 Using " " : to increase or decrease the setting.
- 5.6 Using " " to access/confirm the selection.

To leave factory mode

- 5.7 After alignment of factory mode, turn off monitor (if you do not turn off monitor, the OSD menu is always at the factory mode), then turn on monitor again (at this moment, the OSD menu goes back to user mode).

6. Picture geometry setting

- Apply a video signal with cross-hatch pattern.
 - Apply a video signal in the 1024 x 768 with 68.7 kHz/85 Hz mode.
 - Set contrast control at Max. position, and brightness control in the mid-point.
- 6.4 Alignment of horizontal geometry and vertical geometry
 - 6.4.1 Adjust the H-width to 306 mm
 - 6.4.2 Adjust the H-phase to center position.
 - 6.4.3 Adjust V-size to 230mm.
 - 6.4.4 Adjust V-Position to center.
Adjust/Trapezoid/pincushion/balance pincushion/parallelogram
 - 6.4.5 Adjust picture tilt via I²C BUS for correct top/bottom lines.
 - 6.4.6 Adjust the top and bottom corner by I²C to get optimum corner geometry.
 - 6.4.7 Adjust the parallelogram by I²C BUS to get optimum vertical line.
 - 6.4.8 Adjust the balance pincushion by I²C BUS to get optimum vertical line.
 - 6.4.9 Adjust the trapezoid to get optimum vertical line.
 - 6.5 Adjust size/centering/trapezium/pincushion/parallelogram of all other preset modes via I²C bus.
(to repeat from step 6.4.1 to step 6.4.9)

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7. Alignment of Vg2 cut-off point, white tracking

Equipment : 1. Video Test Generator-801GC (Quantum Data)
2. Color-analyzer (Minolta CA-100)
VG2 [(screen), at the bottom of the L.O.T.].
7.1 Apply a video signal in the 1024 x 768 with 68.7 kHz/85 Hz mode, select the "full white pattern" (sizes 306 x 230 mm).
* Use color-analyzer (Minolta CA-100) to adjust R/G/B cutoff and gain.

OSD R/G/B cut-off and R/G/B gain can be accessed (for Philips CRT), with initial data:
9300 °K
R cutoff = 50%, R gain = 73% (I² C)
G cutoff = 50%, G gain = 73% (I² C)
B cutoff = 50%, B gain = 73% (I² C)
6500 °K
R cutoff = 50%, R gain = 71% (I² C)
G cutoff = 50%, G gain = 71% (I² C)
B cutoff = 50%, B gain = 71% (I² C)

Brightness = 50%, Sub-Contrast = 86%, ABL = 63% (I² C)

Step 1: To access factory mode

- Turn off monitor (don't turn off PC)
- Press " " and " " simultaneously on the front control panel, then press " ", wait till the OSD menu with characters V20 107E5 V0.20 20021217 (below OSD menu)" comes on the screen of monitor as shown in Fig. 2.1.



Fig. 2.1

- If OSD menu disappears on the screen of monitor, press " " again (anytime), then the OSD menu comes on the screen again.
- Using " " to select M 32 107E/T4P V1.23 20020426.
- Press " " button to access/confirm the selection. Bring up the "function adjustment" as shown in Fig. 2.2.
- Press " " button for function selection as shown in Fig. 2.2.
- Press " " button to access/confirm each item selection (The cursor indicator will be changed from yellow colour to red colour.)
- Using " " : to increase or decrease the value.

9300	BIAS	R	G	B	GAIN	R	G	B	(for ref. 164,173,133,216,188,194)
6500	BIAS	R	G	B	GAIN	R	G	B	(for ref. 158,177,136,208,148,132)
SRGB	BIAS	R	G	B	GAIN	R	G	B	(for ref. 161,178,137,182,132,118)
SRGB	()				OSD				(for ref. 127,255,190)
V	(OFF	GAIN	LINBAL	FOCUS)					(for ref. 127,255,140,140)
CORNER	(T	B)	EHT	(H	V)				(for ref. 188,190,83,105)
PINCOR	(T	B	S	W)	B+				(for ref. 112,124,125,236,124)
ABL	SUB	()							(for ref. 129,220,100,194)
LIN	(H	V)							(for ref. 88,34)
RANGE	()								(for ref. 127,255)
EXIT									

Fig. 2.2
(for example: 152 is value of "BIAS R")

BIAS R G B : R(red) G(green) B(blue) cutoff
GAIN R G B : R(red) G(green) B(blue) gain
OSD contrast : OSD window contrast
V OFFSET : Vertical raster center
V GAIN : Vertical size center
VLIN BAL : Vertical Linearity Balance
V FOCUS : Vertical Focus adjustment
T CORNER: Corner Correction of TOP
B CORNER: Corner Correction of BOTTOM
EHT H : Horizontal Size compensation
EHT V : Vertical Size compensation
Pincor T : Top corner asymmetry correction
Pincor B : Bottom corner asymmetry correction
Pincor S : Pincushion S-correction
Pincor W : Pincushion W-correction
B+ : High voltage adjustment
ABL : Auto brightness Limitation
SUB : Sub Contrast allowance range
SUB : Sub Brightness allowance range
SUB : Horizontal size range adjustment range
HLIN : Horizontal Linearity
V LIN : Vertical Linearity
RANGE : Zoom range
RANGE : User Horizontal size adjustment range

7.2 Connect the video input, set brightness control at center, and contrast control at maximum

7.3

set R,G,B cut-off at 127 9300k and 6500K(EEPROM preload value)
R,G,B gain at 185 9300k and
180 6500K(EEPROM preload value)
ABL at 160 9300k (EEPROM preload value)
SUB-CON at 220 9300k (EEPROM preload value)

7.4 Adjust 9300K color:

With color analyzer CA 100,
set R,G,B cut-off x=0.283, y=0.297, Y=0.10

7.5 Set R,G,B gain Y= 41+/- 1FL, x=0.283, y=0.297

7.6 Repeat 7.4,7.5 until RGB three guns get x=0.283, y=0.297, readings on low Y=0.10+/-0.05FL and high Y=41+/-1FL brightness of 9300.

7.7 Adjust 6500K color:

With color analyzer CA 100,
set R,G,B cut-off x=0.313, y=0.329, Y=0.10

7.8 Set R,G,B gain Y= 36+/- 1FL, x=0.313, y=0.329

7.9 Repeat 7.7,7.8 until RGB three guns get x=0.313, y=0.329, readings on low Y=0.10+/-0.05FL and high Y=36+/-1FL brightness of 6500.

7.10 Adjust SUB-CON to get Y=41+/-1FL.

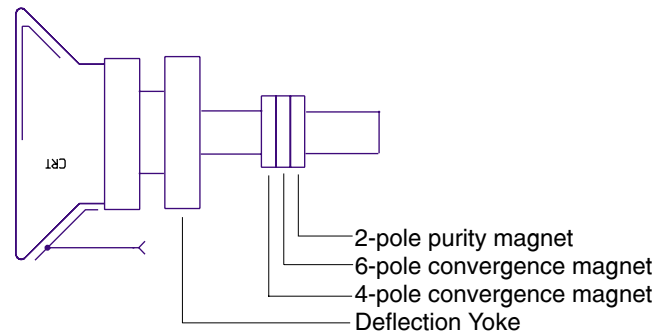
7.11 Apply full white pattern of 9300 mode, adjust ABL to reach 30 +/- 1FL(at 9300 high brightness of R/G/B gain, contrast at 100%)

8. Focus adjustment

Apply a signal of " ME " pattern. at 68.7 kHz/85 Hz mode set the brightness to mid-position , contrast to max - position and adjust the focus for optimal sharpness in the area within 2/3 from the screen center.

9. Loading DDC code

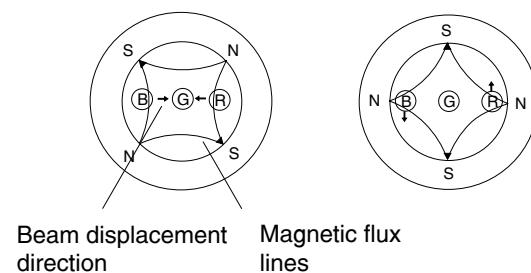
The DDC HEX data should be written into the EEPROM (7802) by EDID301.EXE Program(3138 106 10103) and software DDC Alignment kits (4822 310 11184).



10. Purity adjustment

- Make sure the monitor is not exposed to any external magnetic field.
- Produce a full red pattern on the screen, adjust the purity magnet rings on the PCM assy (on CRT) to obtain a complete field of the color red. This is done by moving the two tabs (2-pole) in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180 degree.
- Check by full green pattern and full blue pattern again to observe their respective color purity.

4-pole Beam motion produced by the 4-pole convergence magnet



11. Static convergence

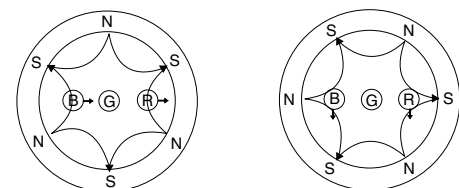
Introduction

Slight deviation in the static convergence can be corrected by using two permanent pairs of magnets which are fitted around the neck of the CRT. These are the 4-pole magnet and the 6-pole magnet. The 4-pole magnet move the outermost electron beams (R and B) parallel in the opposite direction from the other. The 6-pole magnet moves the outermost electron beam (R, B and G) parallel in the opposite direction from the other. The magnetic field of the above magnets do not affect the center of the CRT neck.

Setting

- Before the static convergence setting can be made, the monitor must be switched on for 30 minutes.
- The focus setting must be made correctly.
- Signal: 640 * 480, 31.5 kHz/60 Hz mode.
- Set the tabs of the 4-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R and B electron beams.
- Set the tabs of the 6-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R, B, and G electron beams.
- First set the 4-pole magnet optimally.
- Then set the 6-pole magnet optimally.
- If the convergence is not now optimal, then adjust to the optimal setting with the 4-pole magnet and then with the 6- Pole magnet again.
- Set the tabs of the 6-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R, B, and G electron beams.
- First set the 4-pole magnet optimally.
- Then set the 6-pole magnet optimally.
- If the convergence is not now optimal, then adjust to the optimal setting with the 4-pole magnet and then with the 6- pole magnet again.

6-pole Beam motion produced by the 6- pole convergence magnet



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All units that are returned for service or repair must pass the original manufactures safety tests. Safety testing requires both **Hipot** and **Ground Continuity** testing.

HI-POT TEST INSTRUCTION

1. Application requirements

- 1.1 All mains operated products must pass the Hi-Pot test as described in this instruction.
- 1.2 This test must be performed again after the covers have been refitted following the repair, inspection or modification of the product.

2. Test method

2.1 Connecting conditions

- 2.1.1 The test specified must be applied between the parallel-blade plug of the mainscord and all accessible metal parts of the product.
- 2.1.2 Before carrying out the test, reliable conductive connections must be ensured and thereafter be maintained throughout the test period.
- 2.1.3 The mains switch(es) must be in the "ON" position.

2.2 Test Requirements

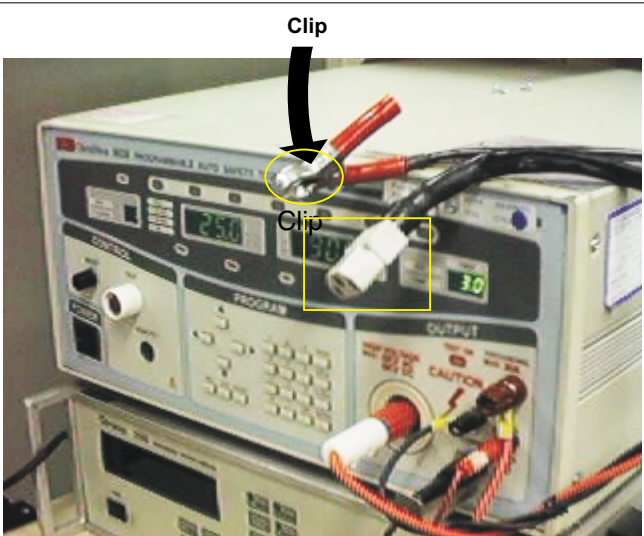
All products should be HiPot and Ground Continuity tested as follows:

Condition	HiPot Test for products where the mains input range is Full range(or 220V AC)	HiPot Test for products where the mains input is 110V AC(USA type)	Ground Continuity Test requirement
Test voltage	2820VDC (2000VAC)	1700VDC (1200VAC)	Test current: 25A,AC Test time: 3 seconds(min.) Resistance required: <=0.09+R ohm, R is the resistance of the mains cord.
Test time (min.)	3 seconds	1 second	
Trip current (Tester)	set at 100 uA for Max. limitation; set at 0.1 uA for Min. limitation	5 mA	
Ramp time	set at 2 seconds		

- 2.2.1 The test with AC voltage is only for production purpose, Service center shall use DC voltage.
- 2.2.2 The minimum test duration for Quality Control Inspector must be 1 minute.No breakdown during the test.
- 2.2.3 The test voltage must be maintained within the specified voltage + 5%.
- 2.2.4 The grounding blade or pin of mains plug must be conducted with accessible metal parts.

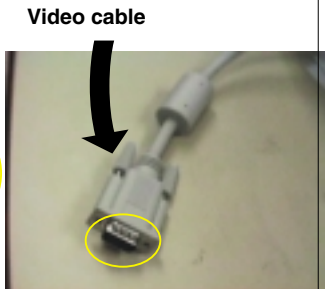
3. Equipments and Connection

- 3.1. Equipments
For example :
 - ChenHwa 9032 PROGRAMMABLE AUTO SAFETY TESTER
 - ChenHwa 510B Digital Grounding Continuity Tester
 - ChenHwa 901 (AC Hi-pot test), 902 (AC, DC Hi-pot test) Withstanding Tester
- 3.2. Connection
 - * Turn on the power switch of monitor before Hipot and Ground Continuity testing.

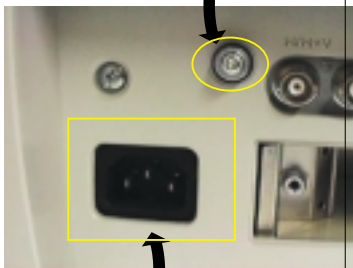


(ChenHwa 9032 tester)

Connect the "video cable" or "grounding screw" to the CLIP on your tester.



Grounding screw



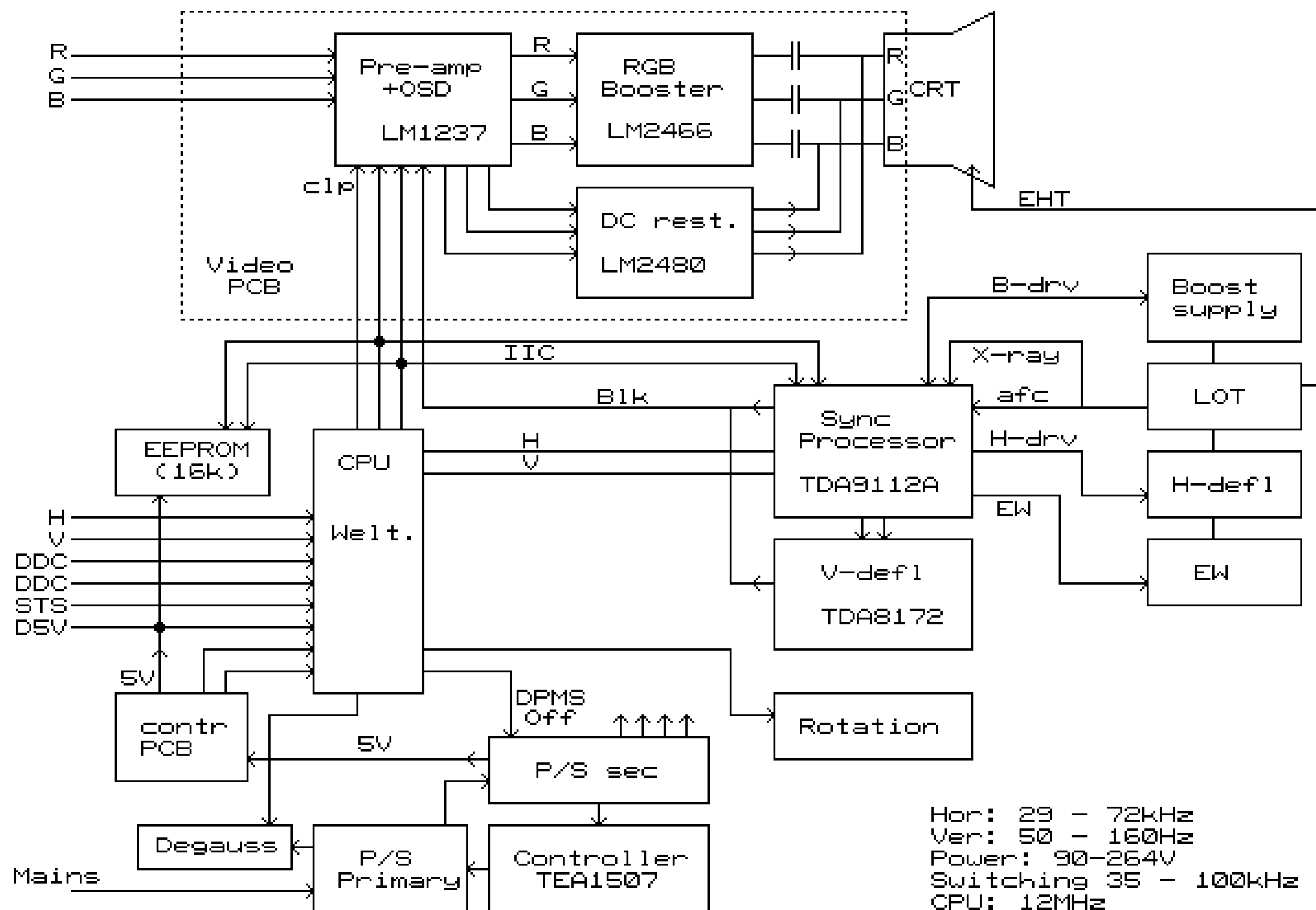
Power outlet

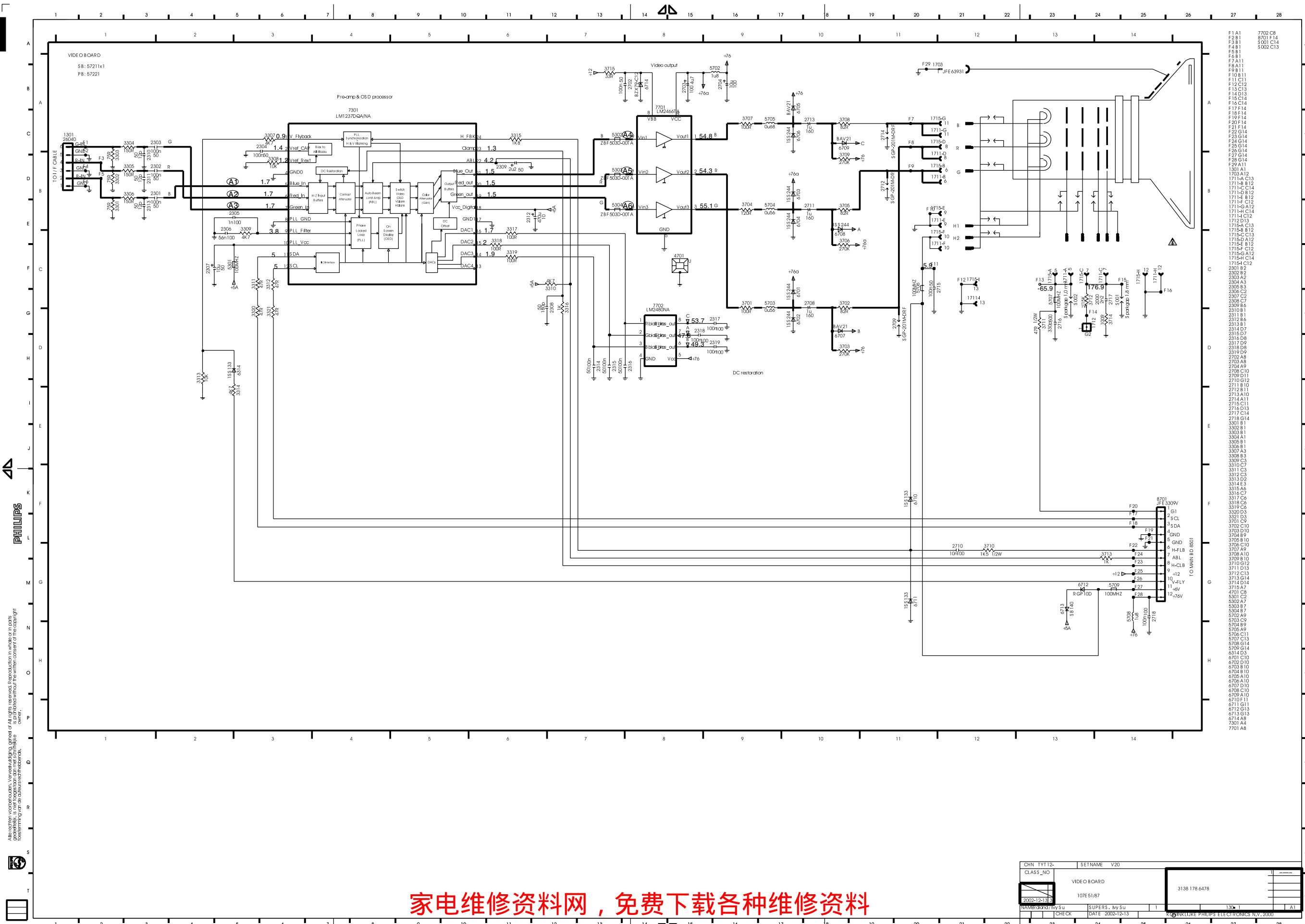
(Rear view of monitor)

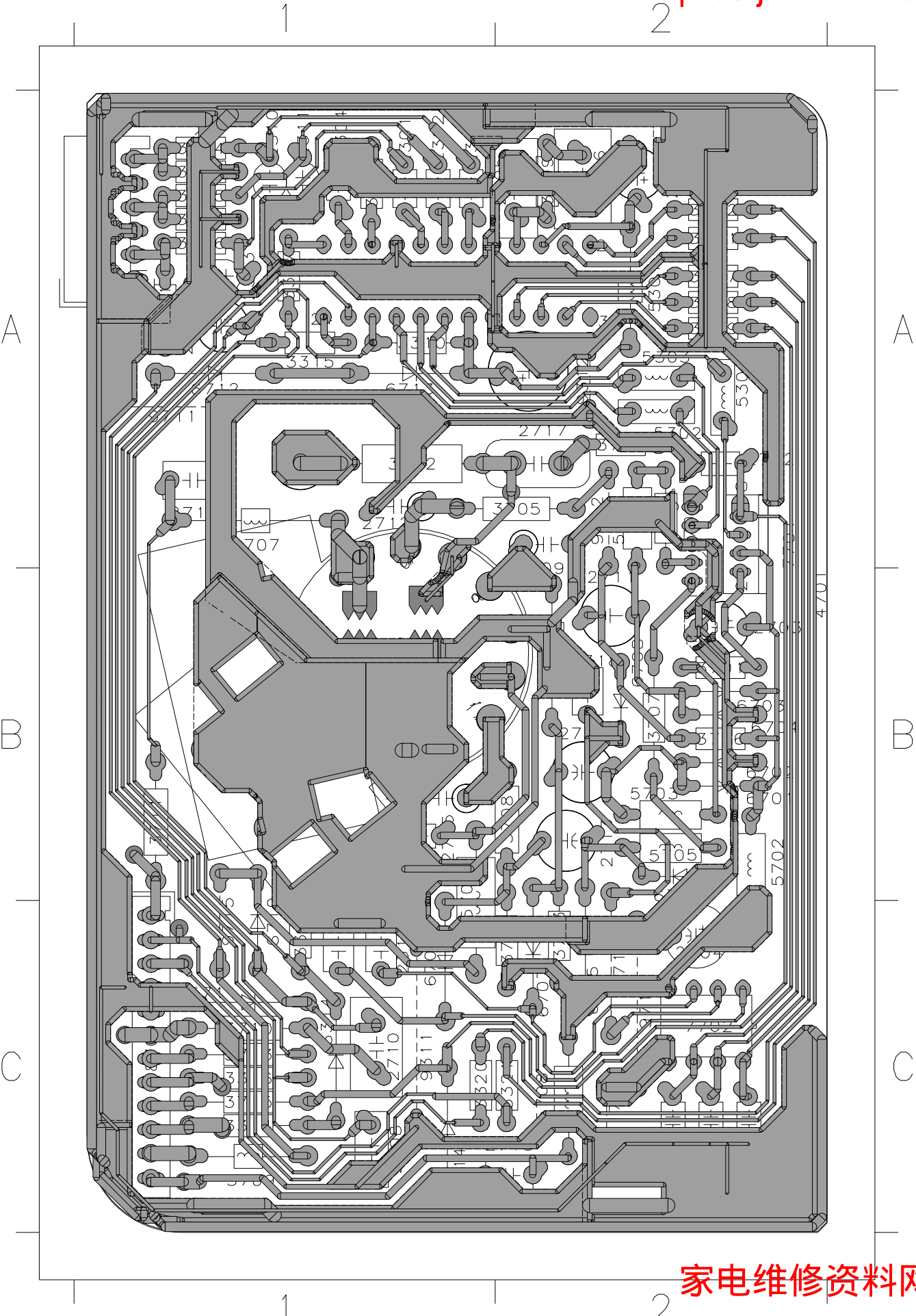
4. Recording

Hipot and Ground Continuity testing records have to be kept for a period of 10 years.

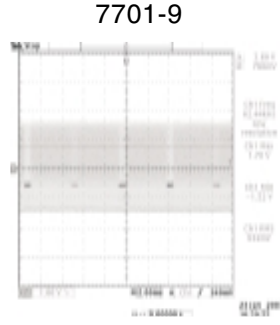
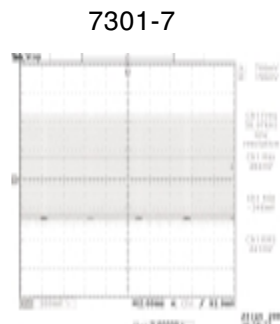
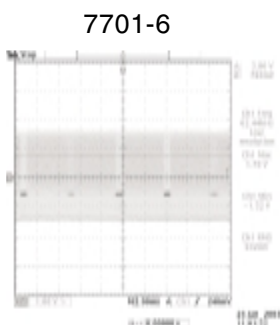
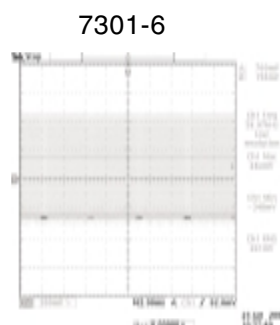
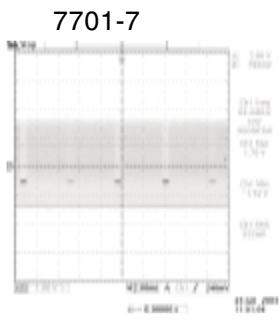
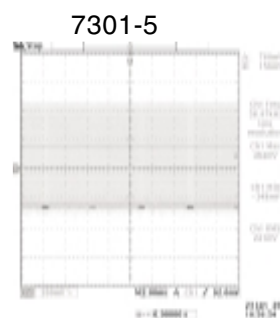
107E5 electrical block diagram

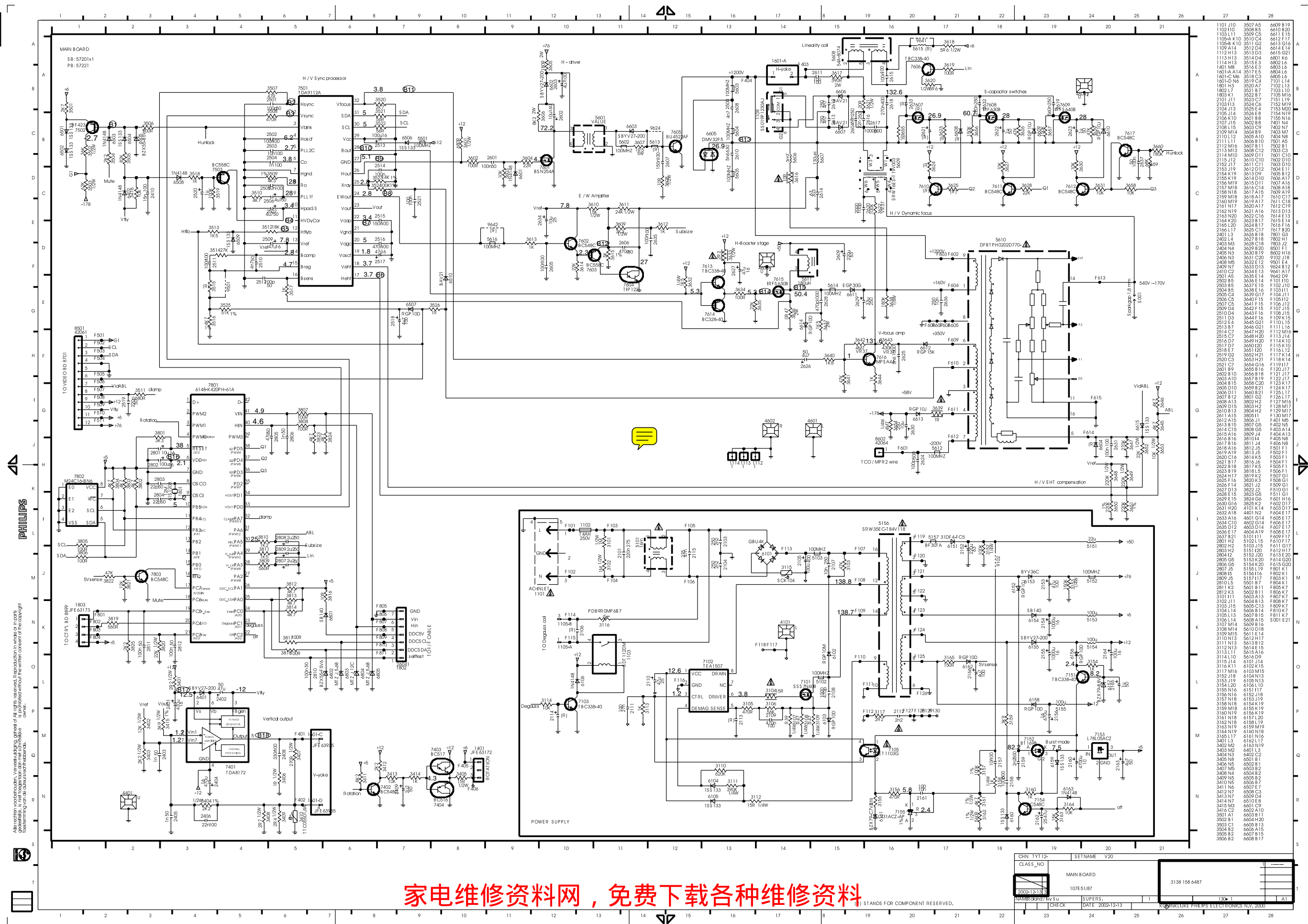


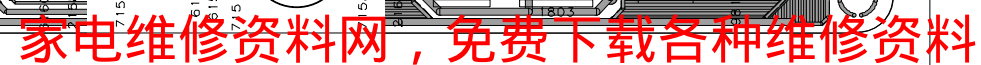




GRID BOARD			
REF	LABEL	SIDE	
1301	A1	B	
1703	B1	B	
1711	B1	B	
1712	A1	B	
1715	B1	B	
2301	A1	B	
2302	A1	B	
2303	A1	B	
2304	A1	B	
2305	A2	B	
2306	A2	B	
2307	A2	B	
2308	C1	B	
2309	A1	B	
2310	A1	B	
2311	A1	B	
2312	A2	B	
2313	A1	B	
2314	C2	B	
2315	C2	B	
2316	C2	B	
2317	B1	B	
2318	B2	B	
2319	C1	B	
2702	A2	B	
2703	B2	B	
2704	C2	B	
2708	B2	B	
2709	A2	B	
2710	C1	B	
2711	B2	B	
2712	A1	B	
2713	B2	B	
2714	B1	B	
2715	B1	B	
2716	A1	B	
2717	A2	B	
2718	C2	B	
3301	A1	B	
3302	A1	B	
3303	A1	B	
3304	A1	B	
3305	A1	B	
3306	A1	B	
3307	A1	B	
3308	A1	B	
3309	A2	B	
3310	A1	B	
3311	A2	B	
3312	A2	B	
3313	C1	B	
3314	C1	B	
3315	A1	B	
3316	C1	B	
3317	A2	B	
3318	A2	B	
3319	A2	B	
3320	C1	B	
3321	C2	B	
3701	B2	B	
3702	B2	B	
3703	C2	B	
3704	A2	B	
3705	A2	B	
3706	B2	B	
3707	B2	B	
3708	B2	B	
3709	C2	B	
3710	C1	B	
3711	B1	B	
3712	A1	B	
3713	C1	B	
3714	A2	B	
3715	C1	B	
5301	A2	B	
5302	A2	B	
5303	A2	B	
5304	A2	B	
5702	B2	B	
5703	B2	B	
5704	A2	B	
5705	B2	B	
5706	B1	B	
5707	A1	B	
5708	C2	B	
5709	C1	B	
6314	C1	B	
6701	B2	B	
6702	B2	B	
6703	B2	B	
6704	B2	B	
6705	C2	B	
6706	B2	B	
6707	C2	B	
6708	B2	B	
6709	C1	B	
6710	C1	B	
6711	C1	B	
6712	A1	B	
6713	A1	B	
6714	C1	B	
7301	A1	B	
7701	A2	B	
7702	C2	B	
8701	C1	B	
9311	C1	B	
9312	A2	B	
9711	A1	B	
9712	A2	B	
9714	C2	B	
9715	C1	B	
9716	C2	B	
9717	C2	B	



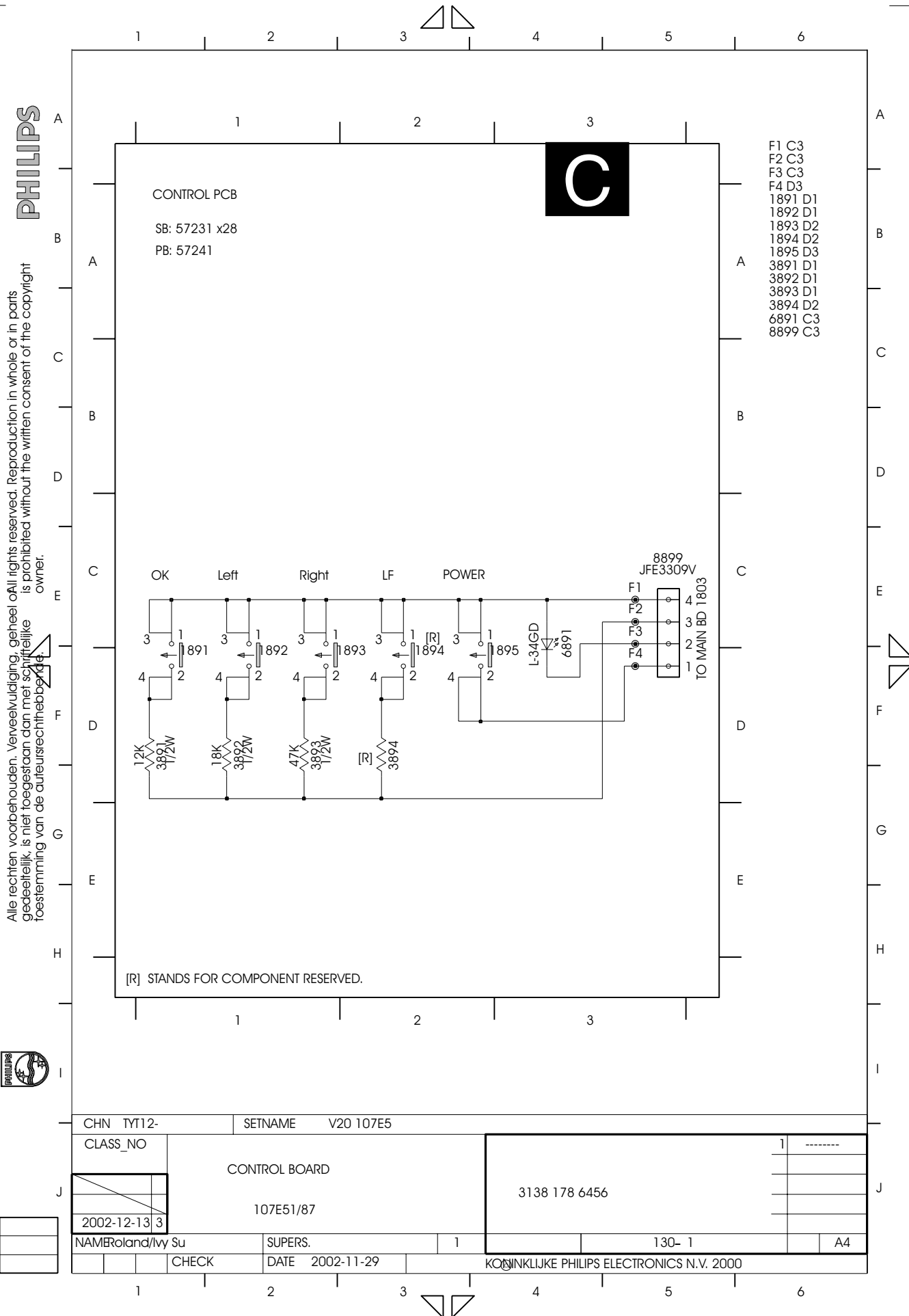




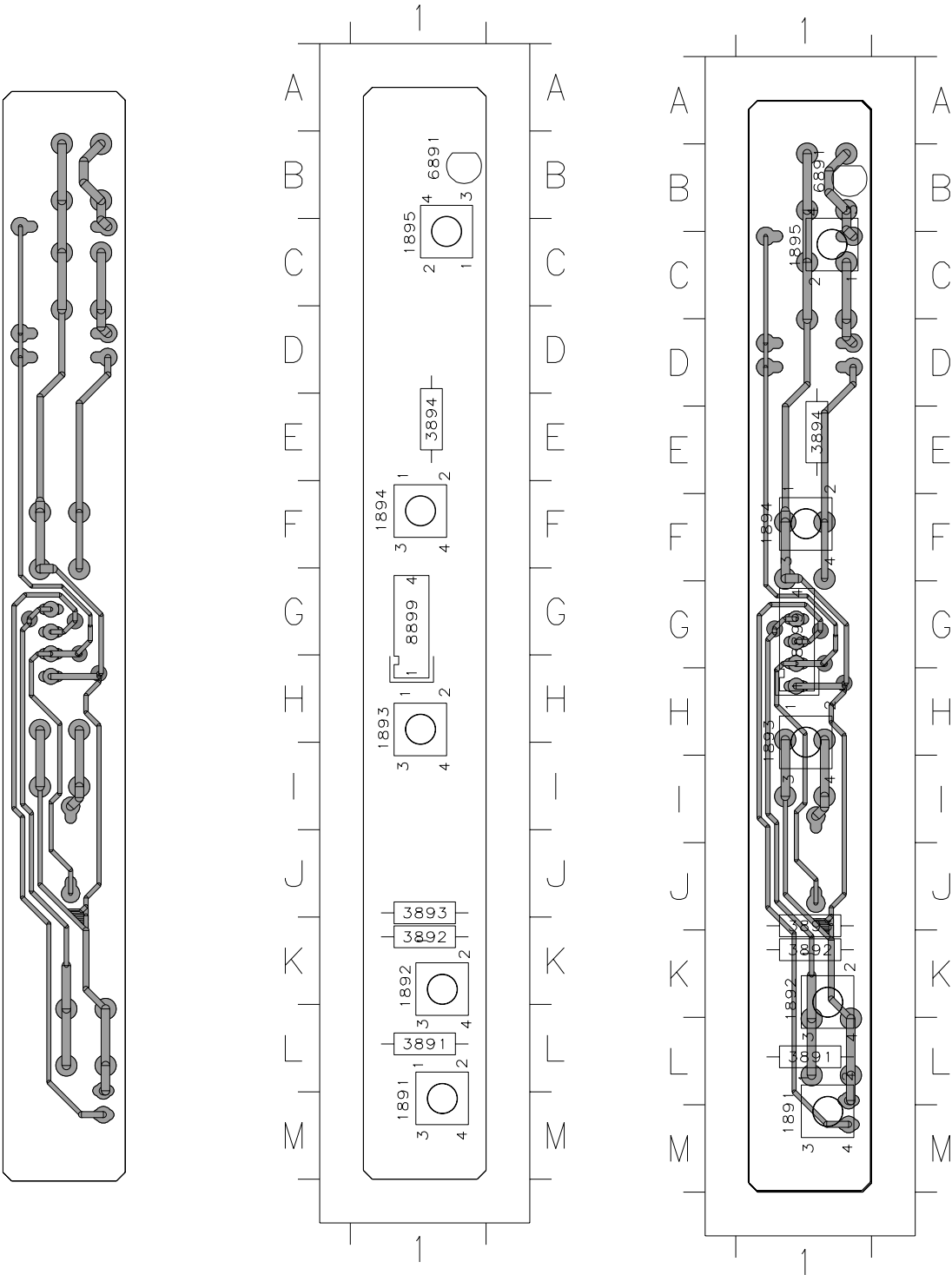
Key Control Schematic diagram

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Key Control Panel C.B.A.(C)



GRID BOARD		
REF LABEL SIDE		
1891	M1	B
1892	K1	B
1893	H1	B
1894	F1	B
1895	C1	B
3891	L1	B
3892	K1	B
3893	J1	B
3894	E1	B
6891	B1	B
8899	G1	B

0. Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

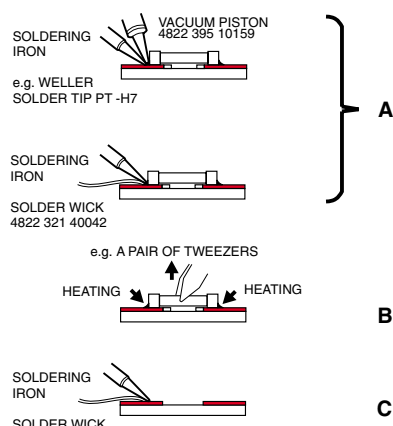
1.1 General cautions on handling and storage

- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A)

Fig. 1 DISMOUNTING



- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

1.3 Caution on removal

- When handling the soldering iron, use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should

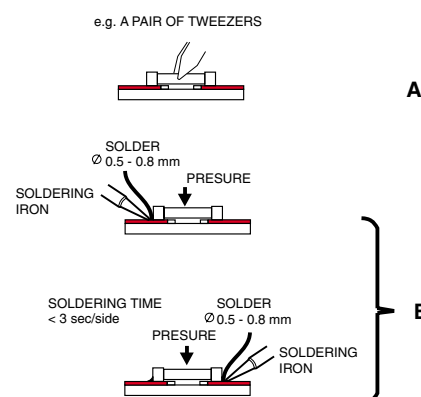
preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).

- The chip, once removed, must never be reused.

1.4 Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig. 2A).
- Next complete the soldering of the terminals of the component (see Fig. 2B).

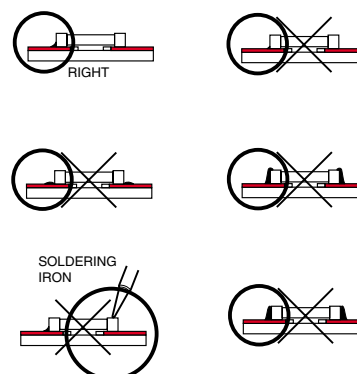
Fig. 2 MOUNTING



2. Caution when attaching SMDs

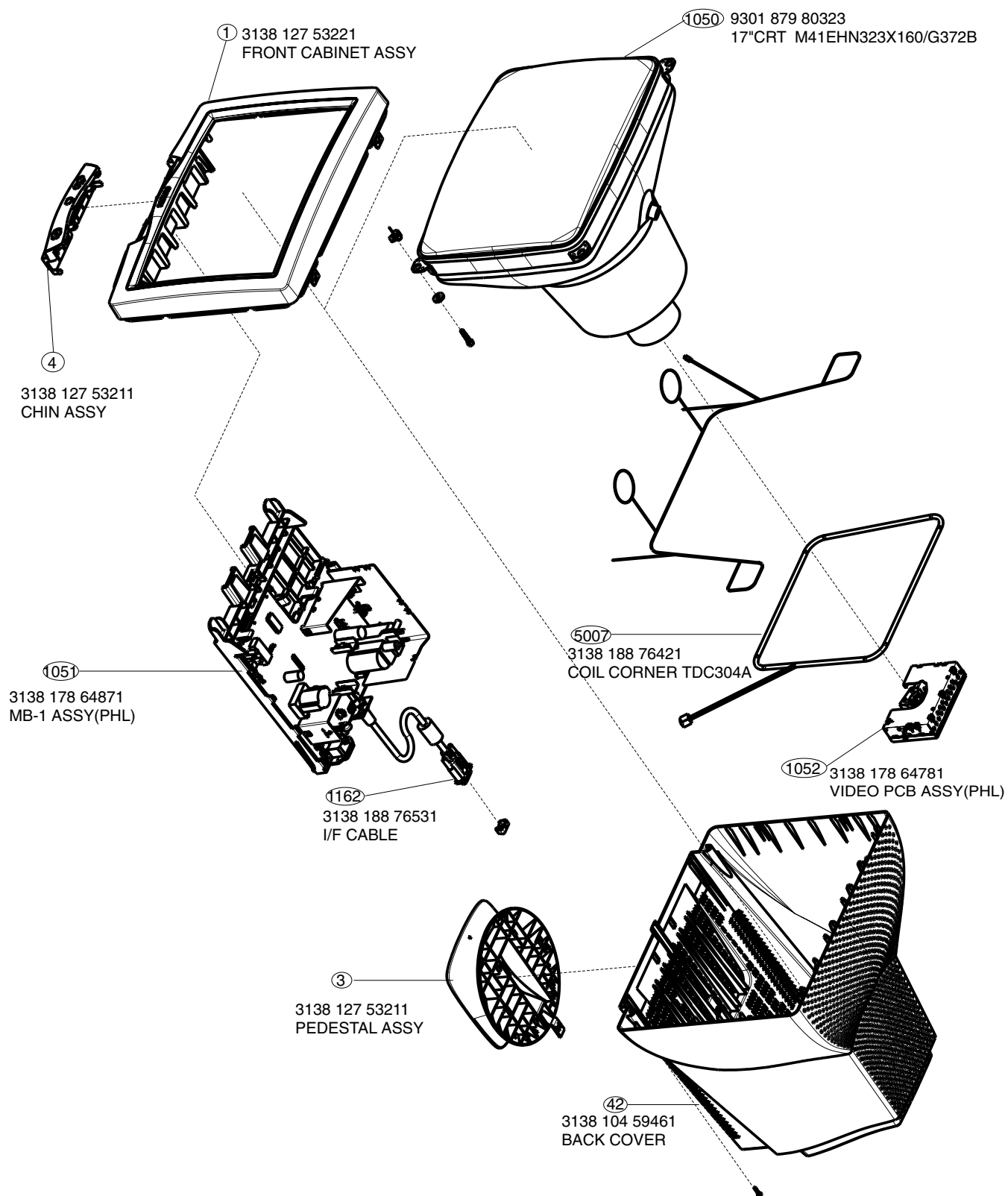
- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

Fig. 3 Examples



Exploded view

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Recommended Parts List

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Recommended parts list of 107E51/87

0001	313812753221	FRONT CABINET ASSY
0003	313812753211	PEDESTAL ASSY
0004	313812753231	CHIN ASSY
0042	313810459461	BACK COVER
0450	313810661791	CARTON
0451	313810661801	CUSHION - TOP
0452	313810661811	CUSHION - BTM
0454	313810656581	PE BAG
0601	313811704781	E-D.F.U. ASSY
1102	242208600208	FUSE 5X20 HT 4A /250V IEC
1103	242213207402	RELAY 1P 12V 10/80A SDT -SS L
1161	243807098118	MAINSCORD(220V)-1.5M-CM30
1162	313818876531	CORD SUB-D 15/1M45/6+7 PIN G
1801	243854300061	RES XTL 12MHZ 30P HC49U B
5007	313818876421	COILCORNER TDC304A
5156	313818874321	TFM SMT LAYER SRW35EC-T84V11
5608	313817877941	LINEARITY COIL
5609	313816877381	DAF XFMR(SRW16EC-T119V3)
5610	313818876431	TFM LOT LAYER 11MM WIRE
5706	243853598058	IND FXD BEAD EMI 1MHZ 80R R
6101	932215736682	BRIGE GBU4K
6605	932214457687	DIO RECDMV32
7101	932217457687	FET POW SSS7N60B
7102	935267356112	IC TEA1507P/N1
7105	932214014667	PHOTOCOUPLER TCET1103G 4P
7155	932208697676	IC TL431ACZ-AP
7153	932208234676	IC L78L05ACZ
7301	932219292682	IC LM1237DQA/NA
7401	933922940682	IC TDA8172
7501	932219219682	IC TDA9112A
7601	934003960126	TRANS BSN254A
7604	931101054687	TRA POW TIP122(ST00)
7605	934040790127	TRA POW BU4522AF
7608	932217995687	FET POW IRF630B (FSC0)
7609	932219384687	FET POW IRFS640B
7621	933984890682	IC LM358N
7702	932216674682	IC LM2480NA
7801	823827444331	CPU,IC6148-K420PH-61A(with code)

Spare Parts List

Parts List		
CTV : 107E51/87		
0001	313812753221	FRONT CABINET ASSY
0003	313812753211	PEDESTAL ASSY
0004	313812753231	CHIN ASSY
0042	313810459461	BACK COVER
1050▲	930187980323	CRTM41EHN323X160/G372BV (LGPD)
Various		
0450	313810661791	CARTON
0451	313810661801	CUSHION - TOP
0452	313810661811	CUSHION - BTM
0454	313810665681	PE BAG
0601	313811704781	E-D.F.U. ASSY
Accessories		
1161▲	243807098118	MAINS CORD(220V)-1.5M
1162	313818876531	Cord SUB-D 15/1M45/6+7pin
1051 MB-1 ASSY(313817864871)		
1051	313817864871	MB-1 ASSY (PHL)
1052	313817864781	VIDEO PCB ASSY (PHL)
1053	313817864561	CONTROL PCB ASSY
1102▲	242208600208	FUSE 5X20 HT 4A/250V IEC
1103▲	242213207402	RELAY 1P 12V 10/80A SDT-SS L
1106	2423812800183	SWITCH
1252	313817864281	power T/R ASSY(7101)
1253	313817864291	HOR. T/R ASSY
1253	313817862891	POWER TRANS ASSY
1254	313817864301	VERT IC ASSY(7401)
1255	313817864471	TRANS IRF630B ASSY(7615)
1256	313817864481	TRANS IRF640B ASSY(7609)
—H—		
2101	203831000006	CAP MPP 275V S 220N PM10 B
2103	202055490163	CERSAF NSB 250V S 2N2 PM20 B
2104	202055490163	CERSAF NSB 250V S 2N2 PM20 B
2105	203803524003	ELCAP LP 400V S 100U PM20 B
2107	203830250229	CAP MPOL 250V S 10N PM5 A
2108	202055890555	CERHDT RR 1KV S 470P PM10 A
2109	203830250099	CAP MPOL 100V S 470N PM10 A
2110	203803527303	ELCAP KM 25V S 47U PM20 A
2111	203830250151	CAP MPOL 100V S 27N PM5 A
2112	202055490158	CERSAF CD 250V S 2N2 PM20 B
2115	203831000009	CAP MPP 275V S 47N PM10 B
2152	203803511606	ELCAP REA 63V S 220U PM20 B
2153	203803521705	ELCAP GS 100V S 47U PM20 B
2154	203803513205	ELCAP RGA 160V S 100U PM20 B
2155	203803521217	ELCAP GS 16V S 1000U PM20 B
2156	203803511222	ELCAP REA 16V S 470U PM20 A
2157	203830150151	CAP PP PPN 100V S 10N PM2 A
2158	225260808011	CER2 DC X7R 500V S 100P PM10 A
2159	202055790153	CER2 DC B 500V S 2N2 PM10 A
2160	202202000716	ELCAP GS 10V S 4700U PM20 B
2161	203830250089	CAP MPOL 100V S 10N PM10 A
2162	203803521306	ELCAP GS 25V S 47U PM20 A
2163	203803511503	ELCAP REA 50V S 4U7 PM20 A
2164	203803521207	ELCAP GS 16V S 100U PM20 A
2165	203801750221	ELCAP RE 50V S 1U PM20 R
2166	203803521701	ELCAP GS 100V S 4U7 PM20 A
2401	203803511222	ELCAP REA 16V S 470U PM20 A
2402	203803521504	ELCAP GS 50V S 47U PM20 A
2403	202055290807	CER2 DC B 50V S 1N PM10 A
2404	203803511222	ELCAP REA 16V S 470U PM20 A
2405	202055290807	CER2 DC B 50V S 1N PM10 A
2406	203830250093	CAP MPOL 100V S 22N PM10 A
2408	203830250098	CAP MPOL 100V S 330N PM10 A
2409	203801750222	ELCAP RE 50V S 2U2 PM20 R
2410	203830250221	CAP MPOL 100V S 15N PM5 A
2501	202055290794	CER2 DC B 50V S 100P PM10 A
2502	203830250212	CAP MPOL 100V S 100N PM5 A
2503	203830250089	CAP MPOL 100V S 10N PM10 A
2504	203830150173	CAP PP PPN 100V S 1N PM5 A
2505	203830250089	CAP MPOL 100V S 10N PM10 A
2506	203803513504	ELCAP RGA 50V S 4U7 PM20 A

2507	203803511503	ELCAP REA 50V S 4U7 PM20 A
2509	203803527201	ELCAP KM 16V S 47U PM20 A
2510	225232512472	CER2 ML X7R 50V S 4N7 PM10 A
2511	203830250095	CAP MPOL 100V S 100N PM10 A
2512	202055290794	CER2 DC B 50V S 100P PM10 A
2513	203803521207	ELCAP GS 16V S 100U PM20 A
2514	225279508453	CER2 DC Y5V 50V 100N P8020 A
2515	203830250121	CAP MPOL 100V S 150N PM10 A
2516	203830250099	CAP MPOL 100V S 470N PM10 A
2517	203803527201	ELCAP KM 16V S 47U PM20 A
2518	203803527701	ELCAP KM 100V S 4U7 PM20 A
2519	202055290607	CER1 DC NP0 50V S 220P PM5 A
2520	203801750221	ELCAP RE 50V S 1U PM20 R
2521	225232626104	CER2 ML X7R 100V S 100N PM10 A
2601	225279508453	CER2 DC Y5V 50V 100N P8020 A
2602	203803513803	ELCAP RGA 160V S 10U PM20 B
2603	203803521701	ELCAP GS 100V S 4U7 PM20 A
2604	203830200153	CAP MPOL 250V S 68N PM10 B
2605	203830250095	CAP MPOL 100V S 100N PM10 A
2606	225232512471	CER2 ML X7R 50V S 470P PM10 A
2607	203830250121	CAP MPOL 100V S 150N PM10 A
2608	222237590634	CAP PP-MPOL 2KV5 S 4N7 PM5 B
2609	203803511606	ELCAP REA 63V S 220U PM20 B
2610	203830100163	CAP PP PPN 630V S 5N6 PM5 B
2611	203830250089	CAP MPOL 100V S 10N PM10 A
2612	203830150111	CAP PP PPN 250V S 4N7 PM5 A
2613	203830150111	CAP PP PPN 250V S 4N7 PM5 A
2614	203803523601	ELCAP BP BP 63V S 3U3 PM10 B
2615	225232626104	CER2 ML X7R 100V S 100N PM10 A
2617	225260808021	CER2 DC X7R 500V S 1N PM10 A
2618	203830100425	CAP MPP MPSA 400V S 270N PM5 B
2619	203830100304	CAP MPP MPS 250V S 560N PM5 B
2620	202055890604	CERHDT RR 2KV S 100P PM10 A
2622	203801750221	ELCAP RE 50V S 1U PM20 R
2623	203801750221	ELCAP RE 50V S 1U PM20 R
2624	202055790142	CER2 DC B 500V S 100P PM10 A
2625	225264133527	CER2 DC Z5U 1KV S 5N6 PM20 B
2626	203803511503	ELCAP REA 50V S 4U7 PM20 A
2627	203803527201	ELCAP KM 16V S 47U PM20 A
2628	225260114416	CER2 DC X7R 1KV S 470P PM10 A
2629	202202000792	ELCAP GS 250V S 33U PM20 B
2630	203803513903	ELCAP RGA 250V S 10U PM20 B
2631	203830250095	CAP MPOL 100V S 100N PM10 A
2632	203830100224	CAP MPP MPS 250V S 220N PM5 B
2634	2038303521303	ELCAP GS 25V S 10U PM20 A
2635	203830250095	CAP MPOL 100V S 100N PM10 A
2636	203830150301	CAP PP PPN 250V S 10N PM5 A
2637	225232512104	CER2 ML X7R 50V S 100N PM10 A
2801	203803521201	ELCAP GS 16V S 10U PM20 A
2802	203803521207	ELCAP GS 16V S 100U PM20 A
2803	202055290594	CER1 DC NP0 50V S 22P PM5 A
2804	202055290594	CER1 DC NP0 50V S 22P PM5 A
2805	202055290598	CER1 DC NP0 50V S 47P PM5 A
2806	202055290807	CER2 DC B 50V S 1N PM10 A
2807	203801750222	ELCAP RE 50V S 2U2 PM20 R
2808	203801750222	ELCAP RE 50V S 2U2 PM20 R
2809	203801750222	ELCAP RE 50V S 2U2 PM20 R
2810	225279508453	CER2 DC Y5V 50V 100N P8020 A
2811	225279508453	CER2 DC Y5V 50V 100N P8020 A
2812	225279508453	CER2 DC Y5V 50V 100N P8020 A
—H—		
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3403	212211000365	RST MFLM MF1/2WS A 2K2 PM1 A
3404	212211000365	RST MFLM MF1/2WS A 2K2 PM1 A
3405	212211000317	RST MFLM MF1/2WS A 15R PM1 A
3406	212211000298	RST MFLM MF1/2WS A 1R PM1 A
3407	212211000341	RST MFLM MF1/2WS A 270R PM1 A
3408	212211000306	RST MFLM MF1/2WS A 2R7 PM1 A
3409	212211000305	RST MFLM MF1/2WS A 2R4 PM1 A
3410	212261200062	NTC DC TTC-501 S 500R PM5 A
3411	213810113822	RST CRB CFR-12 A 8K2 PM5 A
3412	213810113222	RST CRB CFR-12 A 2K2 PM5 A
3413	213810113103	RST CRB CFR-12 A 10K PM5 A
3414	213810113102	RST CRB CFR-12 A 1K PM5 A
3415	212211000372	RST MFLM MF1/2WS A 3K9 PM1 A
3416	213810113103	RST CRB CFR-12 A 10K PM5 A
3501	213810113272	RST CRB CFR-12 A 2K7 PM5 A
3502	212211000397	RST MFLM MF1/2WS A 36K PM1 A
3503	231291516203	RST MFLM MBB0207 A 62K PM1 A
3504	213810113222	RST CRB CFR-12 A 2K2 PM5 A
3505	213810113823	RST CRB CFR-12 A 82K PM5 A
3506	213810113101	RST CRB CFR-12 A 100R PM5 A
3507	213810113479	RST CRB CFR-12 A 47R PM5 A
3508	213810113471	RST CRB CFR-12 A 470R PM5 A
3509	212211000373	RST MFLM MF1/2WS A 4K3 PM1 A
3510	213810113472	RST CRB CFR-12 A 4K7 PM5 A
3511	213810113681	RST CRB CFR-12 A 680R PM5 A
3512	213810113183	RST CRB CFR-12 A 18K PM5 A
3513	213810113152	RST CRB CFR-12 A 1K5 PM5 A
3514	213810113273	RST CRB CFR-12 A 27K PM5 A
3516	212211000374	RST MFLM MF1/2WS A 4K7 PM1 A




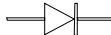

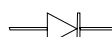








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3518	213810113102	RST CRB CFR-12 A 1K PM5 A
3519	213810113104	RST CRB CFR-12 A 100K PM5 A
3520	213810113272	RST CRB CFR-12 A 2K7 PM5 A
3521	213810113569	RST CRB CFR-12 A 56R PM5 A
3522	213810113569	RST CRB CFR-12 A 56R PM5 A
3523	212211000453	RST MFLM MF1/2WS A 14K PM1 A
3524	231291511004	RST MFLM MBB0207 A 100K PM1 A
3525	231291515103	RST MFLM MBB0207 A 51K PM1 A
3526	213810113108	RST CRB CFR-12 A 1R PM5 A
3601	212211000352	RST MFLM MF1/2WS A 680R PM1 A
3602	213810113101	RST CRB CFR-12 A 100R PM5 A
3603	213810113103	RST CRB CFR-12 A 10K PM5 A
3604	213810113229	RST CRB CFR-12 A 22R PM5 A
3605	212010592158	RST MOX 2W RSS S 180R PM5 B
3606	212010592167	RST MOX 2W RSS S 8K2 PM5 B
3607	213810500226	RST MOX 5W RSS S 1R5 PM5 B
3608	212211000315	RST MFLM MF1/2WS A 10R PM1 A
3609	212211000369	RST MFLM MF1/2WS A 3K3 PM1 A
3610	212211000387	RST MFLM MF1/2WS A 15K PM1 A
3611	212211000393	RST MFLM MF1/2WS A 24K PM1 A
3612	213810113102	RST CRB CFR-12 A 1K PM5 A
3613	213810113102	RST CRB CFR-12 A 1K PM5 A
3614	213810113223	RST CRB CFR-12 A 22K PM5 A
3615	212211000368	RST MFLM MF1/2WS A 3K PM1 A
3616	212020200019	RST FUSE RFU1/3 A 10R PM5 A
3617	213810500402	RST MOX 2W RSS S 390R PM5 B
3618	212211000312	RST MFLM MF1/2WS A 56R PM1 A
3619	213810113101	RST CRB CFR-12 A 100R PM5 A
3620	212211000312	RST MFLM MF1/2WS A 56R PM1 A
3621	212211000319	RST MFLM MF1/2WS A 20R PM1 A
3622	232224213104	RST MGL VR37 A 100K PM5 A
3626	213810113473	RST CRB CFR-12 A 47K PM5 A
3627	213810113103	RST CRB CFR-12 A 10K PM5 A
3628	213810113223	RST CRB CFR-12 A 22K PM5 A
3629	213810113473	RST CRB CFR-12 A 47K PM5 A
3630	213810113103	RST CRB CFR-12 A 10K PM5 A
3631	213810113103	RST CRB CFR-12 A 10K PM5 A
3632	213811273152	RST CRB CFR-25 A 1K5 PM5 A
3633	212020200002	RST FUSE RFS1/2 A 2R2 PM5 A
3634	213810113101	RST CRB CFR-12 A 100R PM5 A
3635	213810113223	RST CRB CFR-12 A 22K PM5 A
3636	213810500202	RST MOX 2W RSS S R47 PM5 B
3637	212010593619	RST MOX 2W RSS S 1K5 PM5 B
3638	213811273184	RST CRB CFR-25 A 180K PM5 A
3639	212020200015	RST FUSE RFU1/3 A 1R PM5 A
3640	213810113182	RST CRB CFR-12 A 1K8 PM5 A
3641	213810113473	RST CRB CFR-12 A 47K PM5 A
3642	232224213475	RST MGL VR37 A 4M7 PM5 A
3643	232224213434	RST MGL VR37 A 40K PM5 A
3644	213810113102	RST CRB CFR-12 A 1K PM5 A
3645	213810113472	RST CRB CFR-12 A 4K7 PM5 A
3646	213810113472	RST CRB CFR-12 A 4K7 PM5 A
3647	213810113274	RST CRB CFR-12 A 270K PM1 A
3648	231291512204	RST MFLM MBB0207 A 220K PM1 A
3649	231291512204	RST MFLM MBB0207 A 220K PM1 A
3650	231291512204	RST MFLM MBB0207 A 220K PM1 A
3651	231291512204	RST MFLM MBB0207 A 220K PM1 A
3652	212211000392	RST MFLM MF1/2WS A 22K PM1 A
3653	212211000383	RST MFLM MF1/2WS A 10K PM1 A
3654	213811273475	RST CRB CFR-25 A 4M7 PM5 A
3656	213810113154	RST CRB CFR-12 A 150K PM5 A
3657	213810113154	RST CRB CFR-12 A 150K PM5 A
3658	213810113103	RST CRB CFR-12 A 10K PM5 A
3659	213810113683	RST CRB CFR-12 A 68K PM5 A
3660	213810113184	RST CRB CFR-12 A 180K PM5 A
3801	213810113332	RST CRB CFR-12 A 3K3 PM5 A
3802	213810113472	RST CRB CFR-12 A 4K7 PM5 A
3803	213810113472	RST CRB CFR-12 A 4K7 PM5 A
3804	213810113472	RST CRB CFR-12 A 4K7 PM5 A
3805	213810113101	RST CRB CFR-12 A 100R PM5 A
3806	213810113101	RST CRB CFR-12 A 100R PM5 A
3807	213810113101	RST CRB CFR-12 A 100R PM5 A
3808	213810113101	RST CRB CFR-12 A 100R PM5 A
3809	213810113561	RST CRB CFR-12 A 560R PM5 A
3810	213810113122	RST CRB CFR-12 A 1K2 PM5 A
3811	213810113152	RST CRB CFR-12 A 1K5 PM5 A

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5101 ▲	313818876471	FIL MAINS 16MH 1A2 163Y1R2	7102	935267356112	IC TEA1507P/N1 (PHSE) L	3315	213810113182	RST CRB CFR-12 A 1K8 PM5 A			
5102	313816872631	BEAD COIL	7103	933953420676	TRA SIG TBC338-40 (TOSJ) A	3316	213810113102	RST CRB CFR-12 A 1K PM5 A			
5103	313816872631	BEAD COIL	7105 ▲	932214014667	OPT CP TCET1103(G) (VISH) L	3317	213810113101	RST CRB CFR-12 A 100R PM5 A			
5151	242253600038	IND FXD TSL0808 S 22U PM10 A	7151	933953420676	TRA SIG TBC338-40 (TOSJ) A	3318	213810113101	RST CRB CFR-12 A 100R PM5 A			
5152	313816872631	BEAD COIL	7152	933826850126	THYRIS BT169B (PHSE) A	3319	213810113101	RST CRB CFR-12 A 100R PM5 A			
5153	242253600036	IND FXD TSL0808 S 100U PM10 A	7153	932208234676	IC L78L05ACZ (ST00) A	3320	213810113479	RST CRB CFR-12 A 47R PM5 A			
5154	242253600036	IND FXD TSL0808 S 100U PM10 A	7154	932209011673	TRA SIG BC548C (KECO) A	3321	213810113479	RST CRB CFR-12 A 47R PM5 A			
5155	242253600036	IND FXD TSL0808 S 100U PM10 A	7155	932208697676	IC TL431ACZ-AP S (ST00) A	3701	213810113101	RST CRB CFR-12 A 100R PM5 A			
5156 ▲	313818876561	TFM SMT LAYER SRW35EC-T84V	7402	932209011673	TRA SIG BC548C (KECO) A	3702	212211000328	RST MFLM MF1/2WS A 82R PM1 A			
5157	243853598058	IND FXD BEAD EMI 100MHZ 80R A	7403	933567130126	TRA SIG BC517 (PHSE) A	3703	213810113274	RST CRB CFR-12 A 270K PM5 A			
5501	313816872631	BEAD COIL	7404	933567120126	TRA SIG BC516 (PHSE) A	3704	213810113121	RST CRB CFR-12 A 120R PM5 A			
5601	313812875441	DRIVER XFORM	7501	932219219682	IC TDA9112A (ST00) L	3705	212211000328	RST MFLM MF1/2WS A 82R PM1 A			
5602	313816872631	BEAD COIL	7502	932214472676	TRA SIG BF423 (KECO) A	3706	213810113274	RST CRB CFR-12 A 270K PM5 A			
5603	313816872631	BEAD COIL	7503	932210142676	TRA SIG BC558C (KECO) A	3707	213810113101	RST CRB CFR-12 A 100R PM5 A			
5604	313816872631	BEAD COIL	7601	934003960126	FET SIG BSN254A (PHSE) A	3708	212211000328	RST MFLM MF1/2WS A 82R PM1 A			
5605	313816872631	BEAD COIL	7602	932209011673	TRA SIG BC548C (KECO) A	3709	213810113274	RST CRB CFR-12 A 270K PM5 A			
5606	242253600037	IND FXD TSL0808 S 3700U PM5 A	7603	932210142676	TRA SIG BC558C (KECO) A	3710	212211000361	RST MFLM MF1/2WS A 1K5 PM1 A			
5607	313818876481	COI CHOKE L30UH 173MOHM Dr14	7606	933953420676	TRA SIG TBC338-40 (TOSJ) A	3711	212211000325	RST MFLM MF1/2WS A 47R PM1 A			
5608	313817877941	LINEARITY COIL	7608	932217995687	FET POW IRF630B (FSCO) L	3712	212010590825	RST MOX 1W RSS A 15K PM5 A			
5609	313816877381	DAF XFMR (SRW16EC-T119V003)	7611	932209011673	TRA SIG BC548C (KECO) A	3713	213810113102	RST CRB CFR-12 A 1K PM5 A			
5610 ▲	313818876431	TFM LOT LAYER 11MM WIRE	7612	932209011673	TRA SIG BC548C (KECO) A	3714	213810113101	RST CRB CFR-12 A 100R PM5 A			
5611	823827444561	180 UH CHOKE	7613	933953420676	TRA SIG TBC338-40 (TOSJ) A	3715	213810113339	RST CRB CFR-12 A 33R PM5 A			
5612	243853598058	IND FXD BEAD EMI 100MHZ 80R A	7614	933179570126	TRA SIG BC328-40 (PHSE) A						
5614	243853598058	IND FXD BEAD EMI 100MHZ 80R A	7616	934025870126	TRA SIG MPSA44 (PHSE) A						
5616	243853598058	IND FXD BEAD EMI 100MHZ 80R A	7617	932209011673	TRA SIG BC548C (KECO) A						
			7801	823827444331	CPU IC 6148-K420PH-61A						
			7802	932212662682	IC M24C16-BN6 (ST00) L						
			7803	932209011673	TRA SIG BC548C (KECO) A						
			8113	313818876211	CBLE FAST/110/RING TERM AWG18						
			8501	313818875991	CBLE OE 12/250/12 OE AWG24KING						
			8602	313818876261	CBLE OE/805/OE BENT AWG22						
			1052 Video PCB ASSY(313817864781)(PHL)								
											
			2301	225232512104	CER2 ML X7R 50V S 100N PM10 A						
			2302	225232512104	CER2 ML X7R 50V S 100N PM10 A						
			2303	225232512104	CER2 ML X7R 50V S 100N PM10 A						
6101	932215736682	BRIDGE GBU4K (PAJL) B	2304	225232512104	CER2 ML X7R 50V S 100N PM10 A						
6102	933783720673	DIO REC RGP10M A (GI00) A	2305	203830150173	CAP PP PPN 100V S 1N PM5 A						
6103	933751660673	DIO REC RGP10D A (GI00) A	2306	203830250111	CAP MPOL 100V S 56N PM10 A						
6104	932210411673	DIO SIG 1SS133 A (RHMO) A	2307	203803527501	ELCAP KM 50V S 10U PM20 A						
6105	932210411673	DIO SIG 1SS133 A (RHMO) A	2308	202055290606	CER1 DC NP0 50V S 180P PM5 A						
6106	933083990133	DIO SIG 1N4148 A (PHSE) A	2309	203801750222	ELCAP RE 50V S 2U2 PM20 R						
6151	932211574682	DIO REC 31DF4-FC5 (NIECO B	2310	202055290591	CER1 DC NP0 50V S 12P PM5 A						
6152	933497950673	DIO REC RGP10J A (GI00) A	2311	202055290591	CER1 DC NP0 50V S 12P PM5 A						
6153	933730980133	DIO REC BYV36C A (PHSE) A	2312	202203100143	ELCAP KM 10V S 470U PM20 A						
6154	933957760673	DIO REC SB140 A (GI00) A	2313	202055290591	CER1 DC NP0 50V S 12P PM5 A						
6155	932210346673	DIO REC SBYV27-200 A (GI00) A	2314	225232512104	CER2 ML X7R 50V S 100N PM10 A						
6156	933751660673	DIO REC RGP10D A (GI00) A	2315	225232512104	CER2 ML X7R 50V S 100N PM10 A						
6157	933166850133	DIO REG BZX79-B8V2 A (PHSE) A	2316	225232512104	CER2 ML X7R 50V S 100N PM10 A						
6158	933751660673	DIO REC RGP10D A (GI00) A	2317	225232626104	CER2 ML X7R 100V S 100N PM10 A						
6159	932210411673	DIO SIG 1SS133 A (RHMO) A	2318	225232626104	CER2 ML X7R 100V S 100N PM10 A						
6160	932210411673	DIO SIG 1SS133 A (RHMO) A	2319	225232626104	CER2 ML X7R 100V S 100N PM10 A						
6161	933117760133	DIO REG BZX79-C7V5 A (PHSE) A	2702	225232512104	CER2 ML X7R 50V S 100N PM10 A						
6162	933751660673	DIO REC RGP10D A (GI00) A	2703	203803527701	ELCAP KM 100V S 4U7 PM20 A						
6401	932210346673	DIO REC SBYV27-200 A (GI00) A	2704	203803513702	ELCAP RGA 100V S 10U PM20 A						
6402	933083990133	DIO SIG 1N4148 A (PHSE) A	2708	203803522801	ELCAP BP NK 160V S 1U PM20 A						
6501	932210411673	DIO SIG 1SS133 A (RHMO) A	2709	242254945382	SURGE PROTECT SGP-201M-DRF						
6502	932210411673	DIO SIG 1SS133 A (RHMO) A	2710	203830250089	CAP MPOL 100V S 10N PM10 A						
6503	933083990133	DIO SIG 1N4148 A (PHSE) A	2711	203803522801	ELCAP BP NK 160V S 1U PM20 A						
6504	932210411673	DIO SIG 1SS133 A (RHMO) A	2712	242254945382	SURGE PROTECT SGP-201M-DRF						
6505	933712640673	DIO REG BZX55-B5V6 A (VISH) A	2713	203803522801	ELCAP BP NK 160V S 1U PM20 A						
6506	932210411673	DIO SIG 1SS133 A (RHMO) A	2714	242254945382	SURGE PROTECT SGP-201M-DRF						
6507	933751660673	DIO REC RGP10D A (GI00) A	2715	225232512104	CER2 ML X7R 50V S 100N PM10 A						
6508	933083990133	DIO SIG 1N4148 A (PHSE) A	2716	202055790686	CER2 DC B 500V S 330P PM10 A						
6509	932210411673	DIO SIG 1SS133 A (RHMO) A	2717	225261216226	CER2 DC Y5P 2KV S 2N2 PM10 B						
6510	933189210133	DIO SIG BAV21 A (PHSE) A	2718	225232626104	CER2 ML X7R 100V S 100N PM10 A						
6601	933083990133	DIO SIG 1N4148 A (PHSE) A									
6602	932210346673	DIO REC SBYV27-200 A (GI00) A									
6603	932210346673	DIO REC SBYV27-200 A (GI00) A									
6606	933189210133	DIO SIG BAV21 A (PHSE) A									
6607	933189210133	DIO SIG BAV21 A (PHSE) A									
6609	933497950673	DIO REC RGP10J A (GI00) A									
6610	933497950673	DIO REC RGP10J A (GI00) A									
6611	933929870683	DIO REC EGP30G A (GI00) R									
6612	933751650683	DIO REC RGP15K A (GI00) R									
6613	933497950673	DIO REC RGP10J A (GI00) A							3301	213810113759	RST CRB CFR-12 A 75R PM5 A
6614	933751660673	DIO REC RGP10D A (GI00) A	3302	213810113759	RST CRB CFR-12 A 75R PM5 A				3891	212211000385	RST MFLM MF1/2WS A 12K PM1 A
6615	932210411673	DIO SIG 1SS133 A (RHMO) A	3303	213810113759	RST CRB CFR-12 A 75R PM5 A	3892	212211000389	RST MFLM MF1/2WS A 18K PM1 A			
6801	933957760673	DIO REC SB140 A (GI00) A	3304	213810113151	RST CRB CFR-12 A 150R PM5 A	3893	212211000401	RST MFLM MF1/2WS A 47K PM1 A			
6802	933712640673	DIO REG BZX55-B5V6 A (VISH) A	3305	213810113151	RST CRB CFR-12 A 150R PM5 A						
6803	932203213673	DIO REG MTZJ5.6B A (RHMO) A	3306	213810113151	RST CRB CFR-12 A 150R PM5 A						
6804	932203216673	DIO REG MTZJ12C A (RHMO) A	3307	213810113472	RST CRB CFR-12 A 4K7 PM5 A						
6805	932203213673	DIO REG MTZJ5.6B A (RHMO) A	3308	213810113103	RST CRB CFR-12 A 10K PM5 A						
			3309	213810113472	RST CRB CFR-12 A 4K7 PM5 A						
			3310	213810113472	RST CRB CFR-12 A 4K7 PM5 A						
			3311	213810113479	RST CRB CFR-12 A 47R PM5 A						
			3312	213810113479	RST CRB CFR-12 A 47R PM5 A						
			3313	213810113103	RST CRB CFR-12 A 10K PM5 A						
			3314	213810113472	RST CRB CFR-12 A 4K7 PM5 A						
			1053 CONTROL PCB ASSY								
			1053 313817864561 CONTROL PCB ASSY								
											
			3891	212211000385	RST MFLM MF1/2WS A 12K PM1 A						
									3892	212211000389	RST MFLM MF1/2WS A 18K PM1 A
3893	212211000401	RST MFLM MF1/2WS A 47K PM1 A									
1053 CONTROL PCB ASSY											
1053 313817864561 CONTROL PCB ASSY											
											

Spare parts list(Different List)

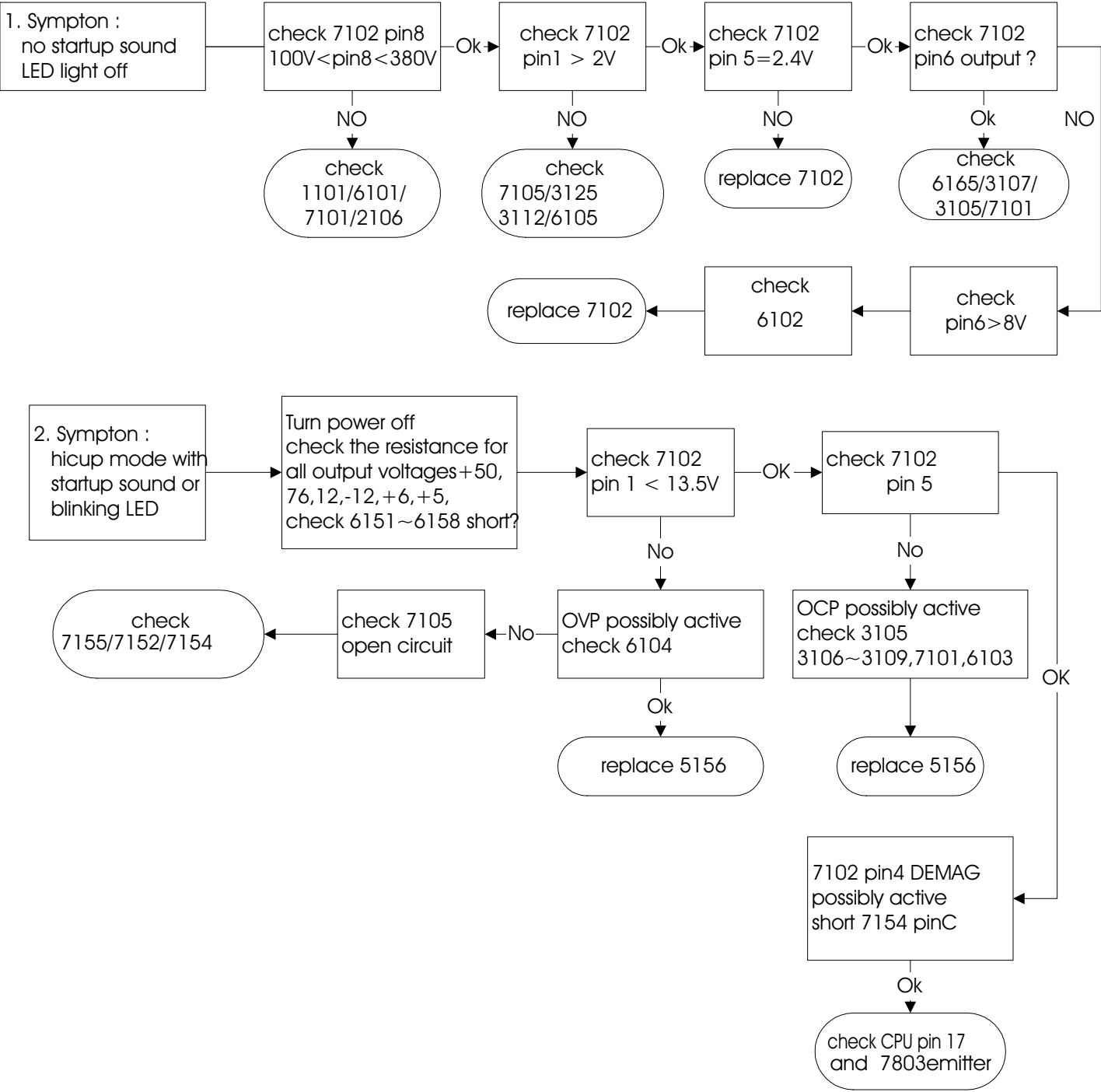
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Item	12NC	Description	12NC	Description	
1050			930190740323	CRT M41LFQ903X39(LA) (LGPD) B	
1050			930191170323	CRT M41LFQ903X39(LA)M (LGPD) B	
1050			823827444381	CRT M41KXU100XX084(SNP)	
1050			930190323323	CRT M41EHN323X160/G372BF (LGPD	
1050			932217270682	CRT M41AGE83X46C(PLD) (CPT0) B	
1051	313817864871	MB-1 ASSY (PHL)			
1051			313817864511	MAIN PCB ASSY (LG)	
1051			313817864521	MAIN PCB ASSY(ORI)	
1051			313817864531	MAIN PCB ASSY(PHL)	
1051			313817864541	MAIN PCB ASSY(CPT)	
1052	313817864781	V/B ASSY			
1052			313817864551	VB ASSY (LG,CPT,OR)	
1052			313817864771	VB ASSY(PHL)	
1050	930187980323	CRT M41EHN323X160/G372BV (LGPD			
1050	930190277323	CRT M41EHN323X160/G372LV (LGPD			

863900012714(107E51/00)			863900013525(107E51/74)		
Item	12NC	Description	12NC	Description	
0201	313811576451	RATING LABEL	313811577021	RATING LABEL	
0450	313810661791	CARTON	313810661981	CARTON	
1161	243807098118	MAINSCORD (220V)-1.5M -CM3000	313811875011	MAINSCORD UL 10A 1M5 DET PDS	
1161	313817874701	MAIN CORD (1.5M. EUROPEAN)	313812876251	MAINS CORD	

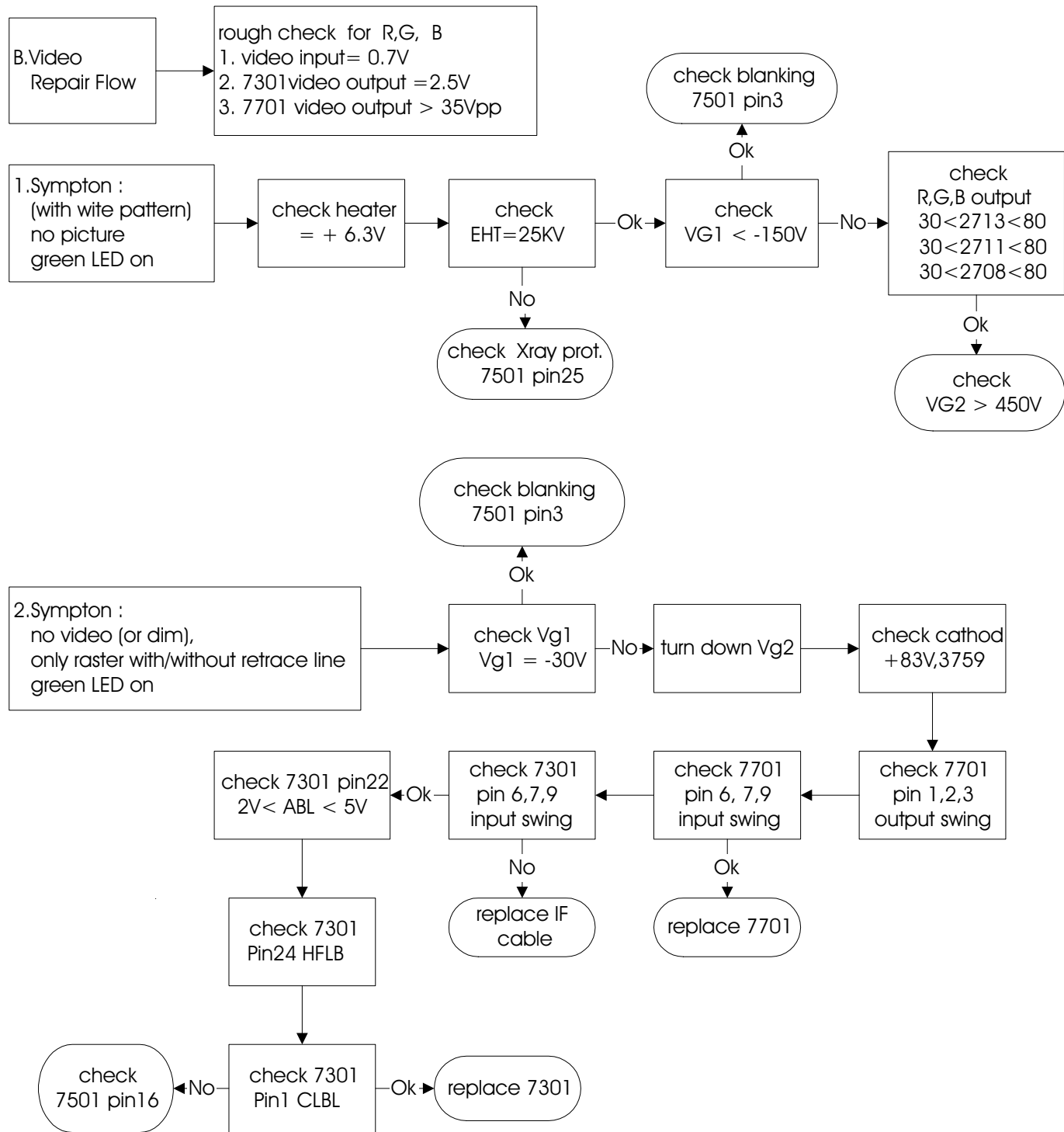
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1050	930191180323	CRT M41LFQ903X39(LU)M (LGPD) B	930191170323	CRT M41LFQ903X39(LA)M (LGPD) B	
1050	823827444621	CRT M41KXU100XX084(SNTP)	823827444381	CRT M41KXU100XX084(SNP)	
1050	930190325323	CRT M41EHN323X160/P372BF (LGPD	930190323323	CRT M41EHN323X160/G372BF (LGPD	
1050			932217270682	CRT M41AGE83X46C(PLD) (CPT0) B	
1051	313817865411	MB-1 ASSY (LG)	313817864511	MAIN PCB ASSY (LG)	
1051	313817865421	MB-2 ASSY (ORI)	313817864521	MAIN PCB ASSY(ORI)	
1051	313817865431	MB-3 ASSY (PHL)	313817864531	MAIN PCB ASSY(PHL)	
1051			313817864541	MAIN PCB ASSY(CPT)	
0001	313812753461	FRONT CABINET ASSY	313812753221	FRONT CABINET ASSY	
0004	313812753471	CHIN ASSY	313812753231	CHIN ASSY	
0042	313810460121	BACK COVER	313810459461	BACK COVER	
0201	313811577301	RATING LABEL	313811576451	RATING LABEL	
0450	313810662171	CARTON	313810661791	CARTON	
0213			313811576551	LABEL-EEPROM (CPT)	
3617	213810500402	RST MOX 2W RSS S 390R PM5 B	213810500402	RST MOX 2W RSS S 390R PM5 B	
7610	933737040676	TRA SIG TBC547C (TOSJ) A	933237790126	TRA SIG BC547C (PHSE) A	
7610	933237790126	TRA SIG BC547C (PHSE) A	933737040676	TRA SIG TBC547C (TOSJ) A	
5007	313818876411	COIL CORNER TDC304	313818876421	COIL CORNER TDC304 A	
5007	313818876391	COI DEGAUS 62-0209-02	313818876401	COI DEGAUS 62-0209-03	
8055	313818876251	CBLE EARTH 462/272	313818876251	CBLE EARTH 462/272	
8055	313818876281	CBLE EARTH 462/272 107E5	313818876281	CBLE EARTH 462/272 107E5	
0041	313810460091	FRONT CABINET	313810459421	FRONT CABINET	
0045	313810460101	CHIN	313810459431	CHIN	
0022	313810460131	TRAY	313810459441	TRAY	

Repair Flow Chart

A. Power Supply Failure



Repair Flow Chart (Continued)



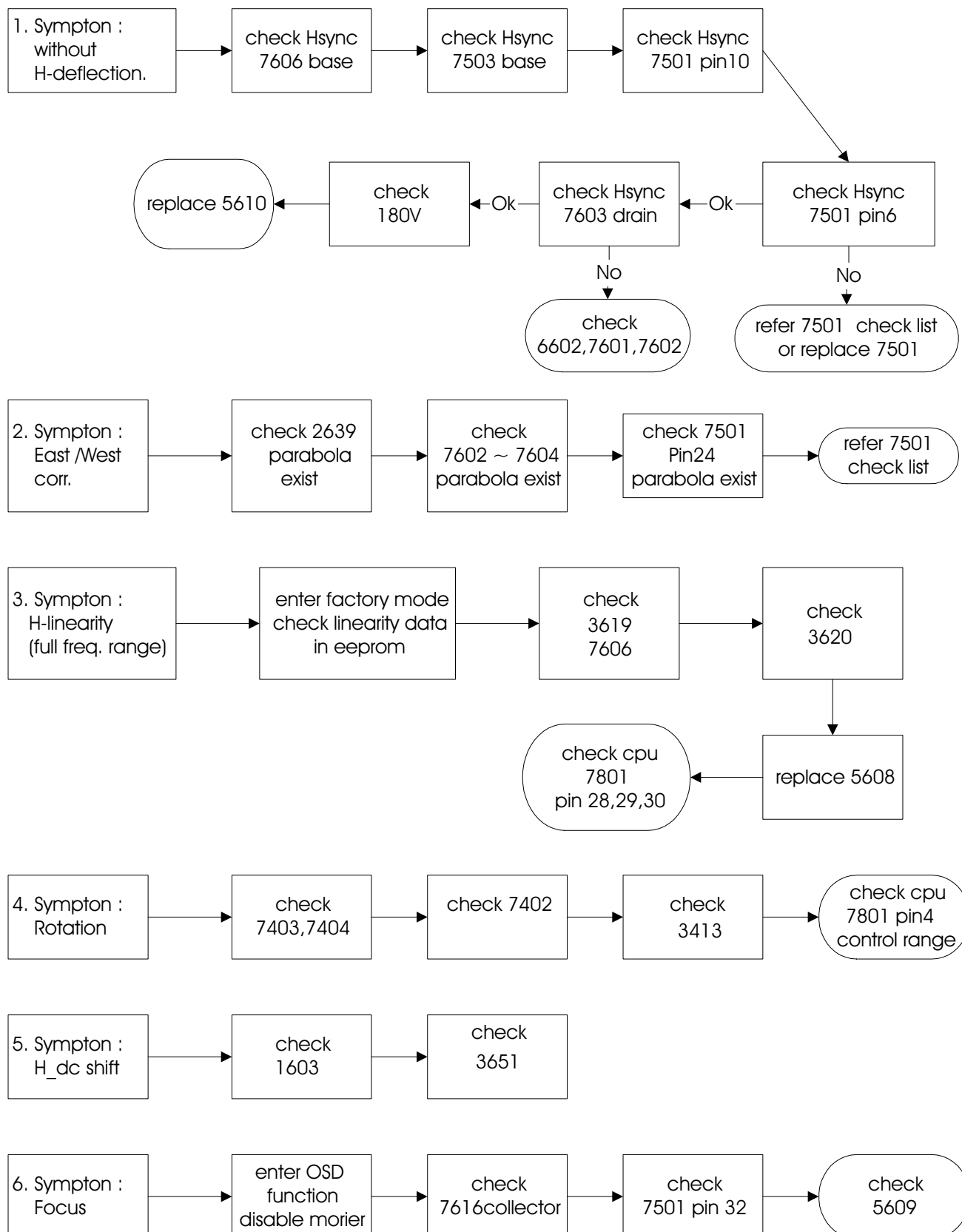
Repair Flow Chart (Continued)

V20 107E5

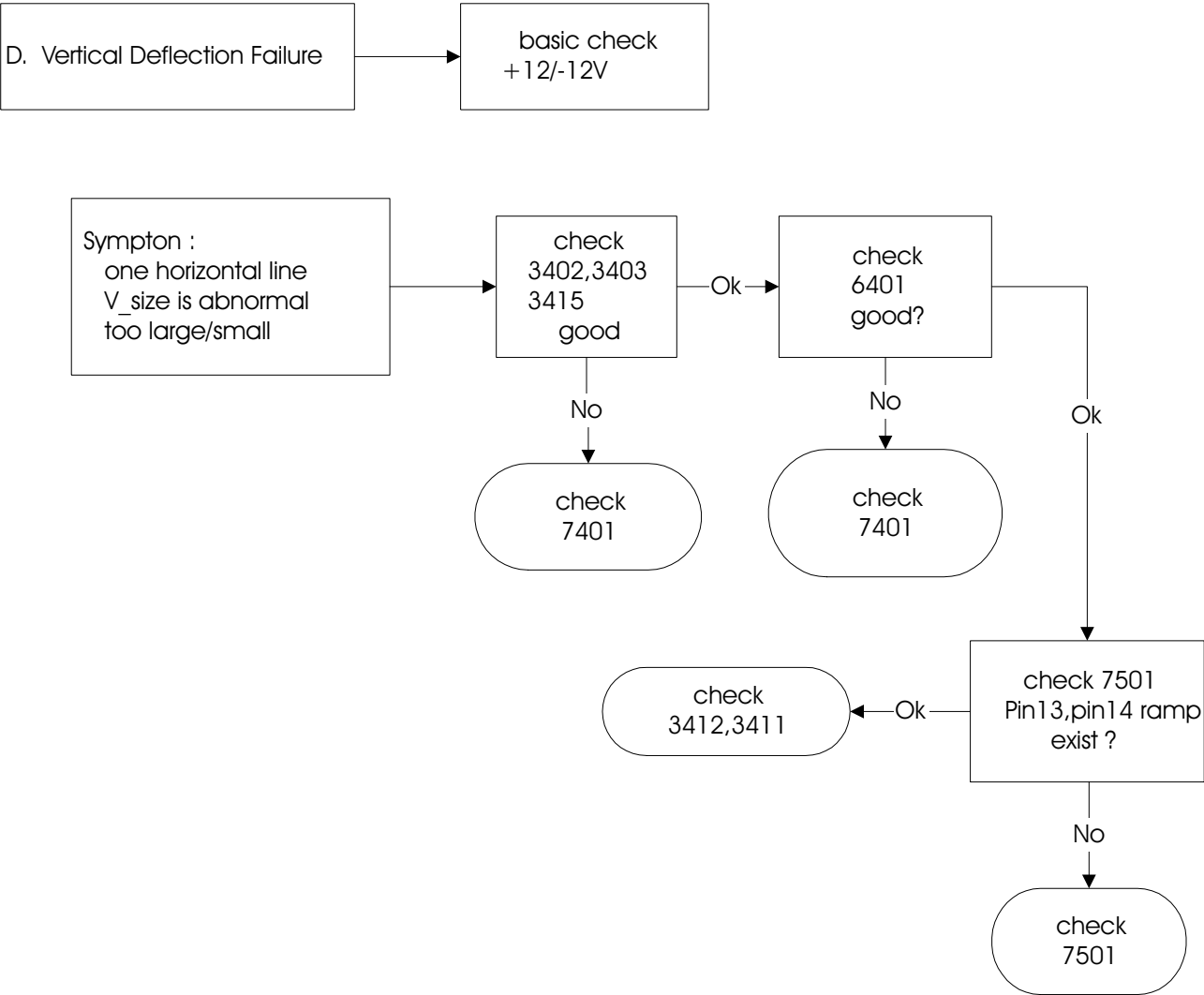
47

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C. Horizontal deflection
output repair flow :

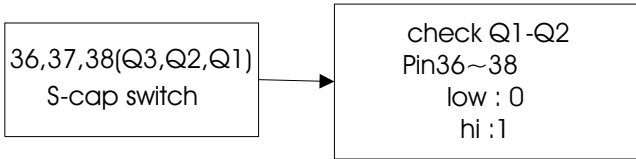
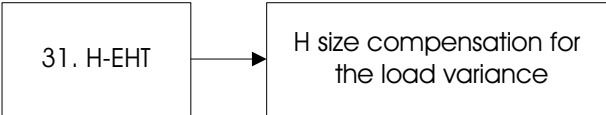
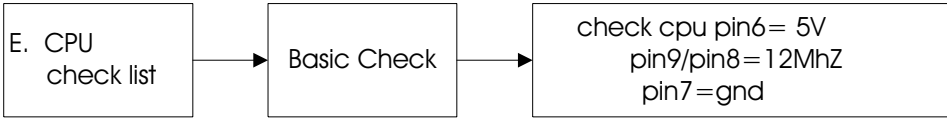


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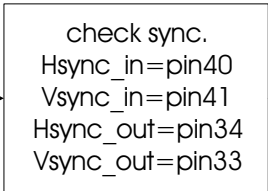
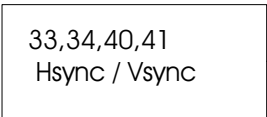
Repair Flow Chart (Continued)

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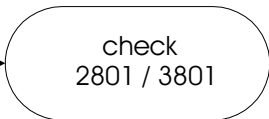
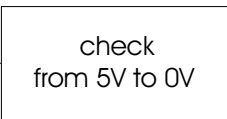
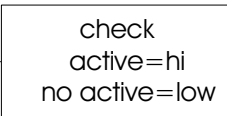
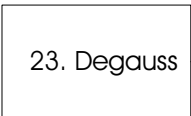
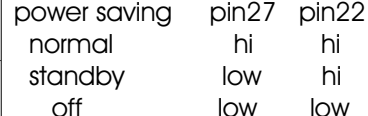
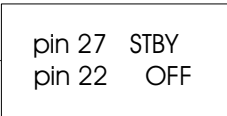
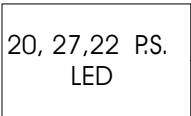
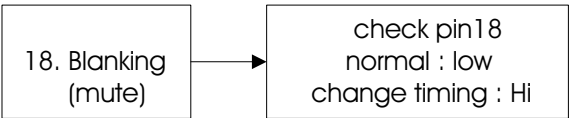


70K S-CAPACITOR SWITCH TABLE

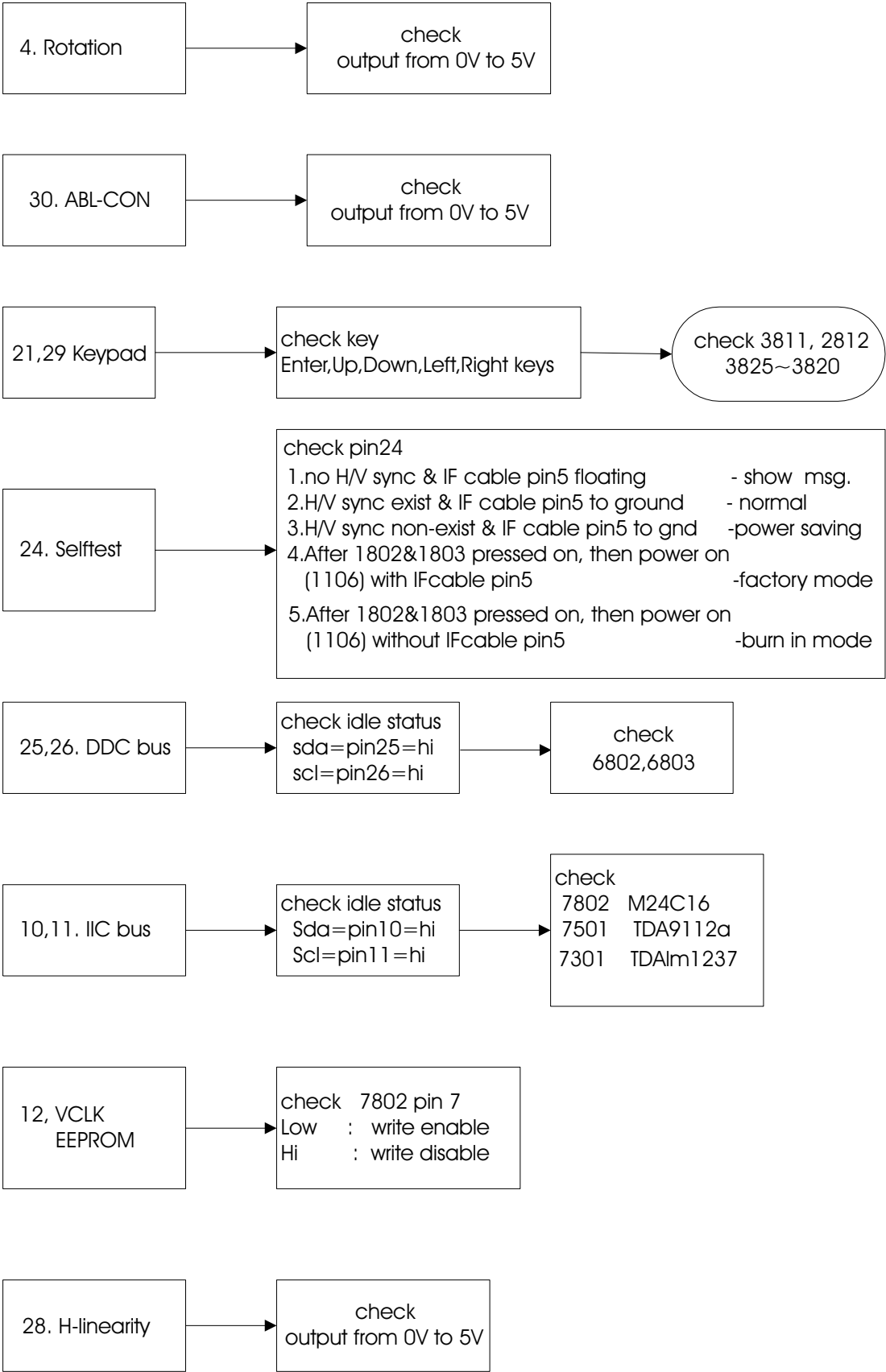
Hor. Freq.(KHz)	Q1	Q2	Q3
< 27.00	0	0	0
27.50-33.24	0	0	0
33.24-36.51	1	1	0
36.51-42.38	1	1	0
42.38-45.07	0	0	1
45.07-53.10	0	1	1
53.10-58.25	0	1	1
58.25-61.89	1	0	1
61.89-66.00	1	0	1
> 66.00	1	1	1



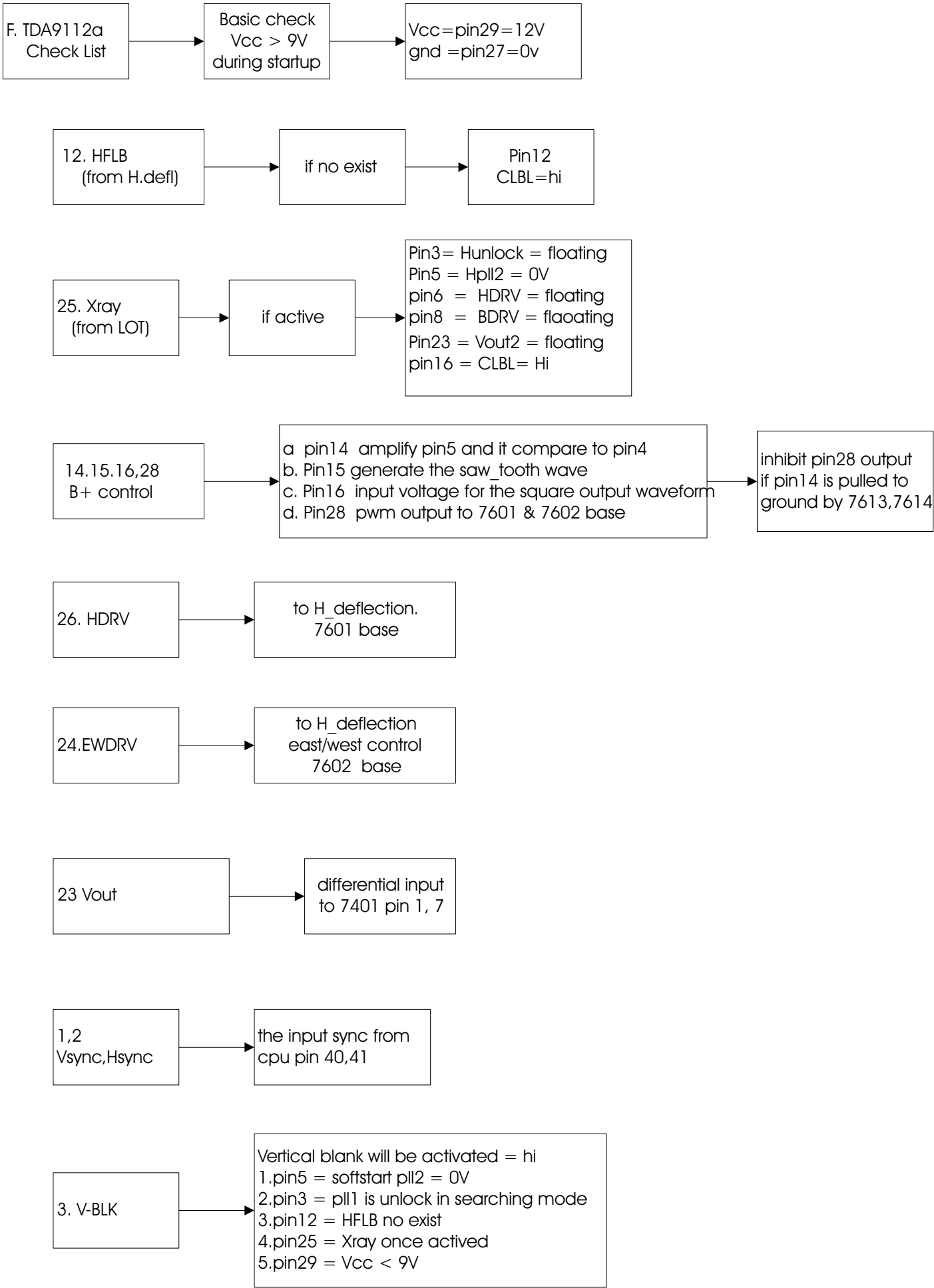
- 1. Normal
Fhout=Fhin
Fvout=Fvin
- 2. Self test
Hout=48Khz
Fvout=72Hz
- 3.sync out of rang
Fhin>72.8kHz, <28kHz
Fvin>168Hz, <45Hz



Repair Flow Chart (Continued)

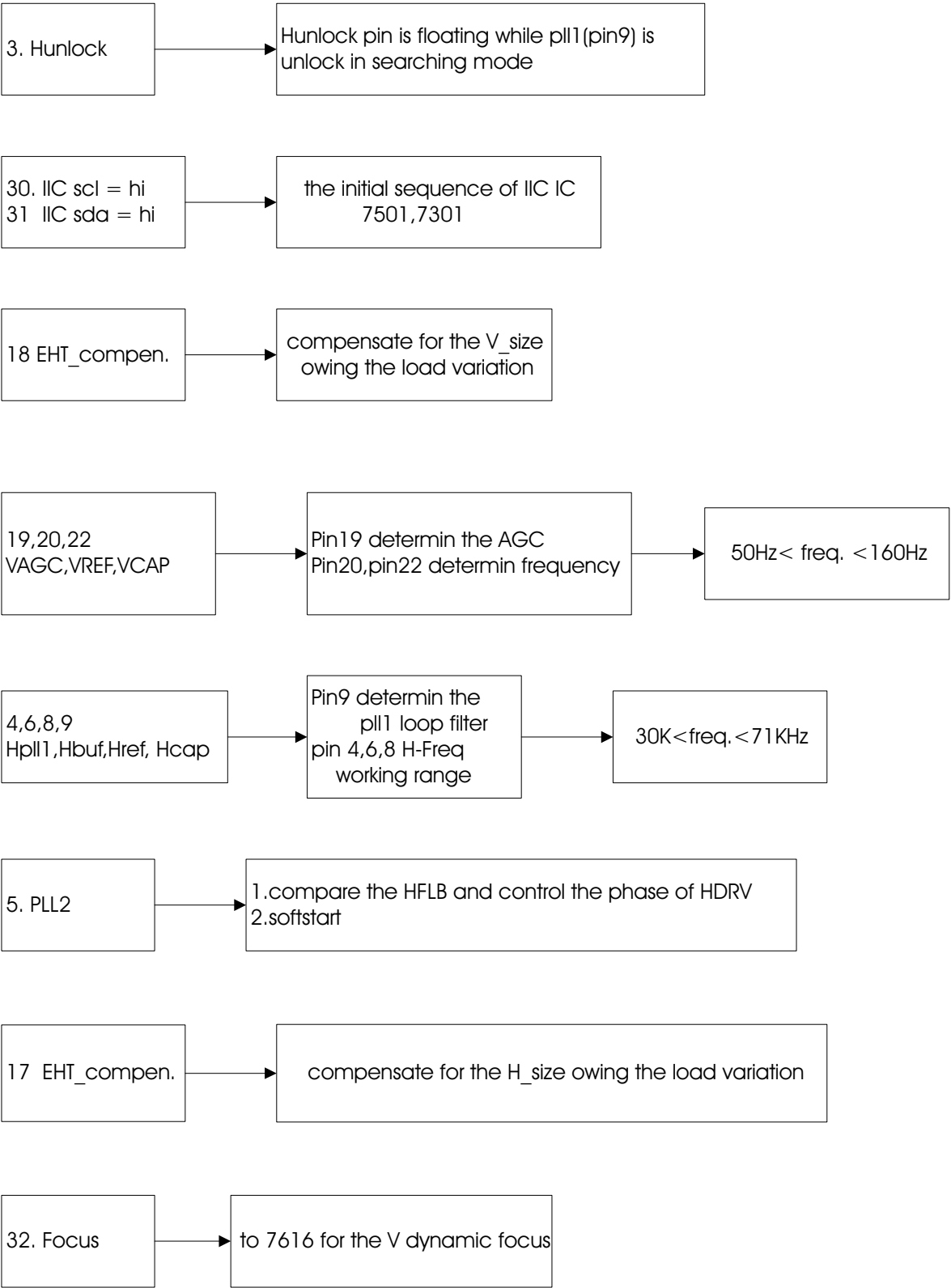


Repair Flow Chart (Continued)



Repair Flow Chart (Continued)

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17" 107E5 ;70KHz General Specification (Sheet 590)

FEATURES / BENEFITS

- EXTREMELY HIGH MTBF (OVER 75K HRS, EXCLUDING CRT)
- PROFESSIONAL LOOK, WITH NON-FLAMMABLE CABINET (94V-0)
- USER'S CONTROLS
 - . FRONT MOUNTED CONTROLS FOR EASY ACCESS
- BETTER DISPLAY PERFORMANCE
 - . FINER CRT DOT PITCH (0.27 MM)
 - . FULL SCREEN SIZE APPLICATION
 - . REAL MULTI-FREQ.
- POWER SAVING MANAGEMENT SYSTEM
- MAXIMIZED CONTAINER LOADING
- VESA DDC2B
- LOW EMISSION MPRII / TCO99/TCO95 (Optional)

CLASS NO.		17" V20 107E5-70K CMTR					
		TYPE : 107E51/87		8639 000 13531			
		BRAND : PHILIPS					
2002-12-13							
NAME	Roland	SUPERS.	29	590	1	10	A4
TY		CHECK	DATE 2002-12-13	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.			

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CLASS NO.		17" V20 107E5-70K CMTR					
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CLASS NO.		17" V20 107E5-70K CMTR			
		TYPE : 107E51/87		8639 000 13531	
		BRAND : PHILIPS			
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1.0 Introduction

This document is related to the 17" AUTOSCAN (VGA above and Max. resolution 1280X1024 by 60HZ refresh) color monitor for world-wide destination.

2.0 General description

The AUTOSCAN analog color monitor is specified as a display peripheral within an IBM PC, PS/2 ,VGA and advance VGA compatible system.

The AUTOSCAN analog color monitor is to operate at horizontal line rates between 30 to 70 KHz and refreshment rate between 50 to 160 Hz, can be applied to all RGB analog computers within this scanning frequencies.

The AUTOSCAN analog color monitor is intended to be a finished product, basically a display device mounted inside a plastic enclosure which provides the aesthetic mechanical, ergonomic and safety requirements.

2.1 General condition

The unit will produce a usable image after switching-on, measurements are to be carried out with a full stabilized set after 30 minutes warm-up at room temperature of 25 C. Repetitive power on/off cycles are allowed though should be avoided within 4 sec.

3.0 Electrical characteristics

3.1 Signal interface

The AUTOSCAN analog color display has an analog video interface to operates at a multi-frequencies timing in several display modes.

3.1.1 Input requirements

- A. Input signals
Video : Analog level
Sync. : Separated sync. with TTL level
Polarity : Positive or negative
- B. Signal input level
Video : 0.7 Vp-p 75 ohms (for individual of R,G and B signals must not deviate 0.015 Vp-p from each other for balance of white pattern)
Sync : TTL level
(between 0 and 0.6 V to be considered as low level ,between 2.3 and 5.0 V as high level)
- C. Impedance
Video : Terminated with 75 ohms
Sync : Terminated with 4.7K ohms pull down resistors.

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		BRAND : PHILIPS			
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TY		CHECK	DATE 2002-12-13	10	A4
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3.1.2 Signals input

The input video signals are applied to the display device through a video cable which is fixed to the monitor (standard cable length 1.45M).

Video input cable :
15 pin D-shell male connector type AMP 211350-1(3 rows) or equivalent, with pin assignment as follows :

Pin assignment of 15P D-SUB connector

Pin nbr.	Assignment
P1	Red video input
P2	Green video input
P3	Blue video input
P4	GND
P5	For selftest (PC Ground)
P6	Red video ground
P7	Green video ground
P8	Blue video ground
P9	DDC 5V
P10	Sync ground
P11	GND
P12	Bi-directional Data (SDA)
P13	H SYNC
P14	V SYNC (VCLK)
P15	Data clock (SCL)

3.1.3 Factory preset modes:

Factory preset modes : 8

Resolution	H. freq.	V. freq.	H.	V.
1. 720 x 400	31.5 KHz	70Hz (VGA)	-	+
2. 640 x 480	31.47 KHz	60Hz (VGA)	-	-
3. 640 x 480	43.3 KHz	85Hz (VESA)	-	-
4. 800 x 600	46.9 KHz	75Hz (VESA)	+	+
5. 800 x 600	53.674 KHz	85Hz (VESA)	+	+
6. 1280x 960	60 KHz	60Hz	+	+
7. 1024 x 768	68.7 KHz	85Hz (VESA)	+	+
8. 1280 x 1024	64.0 KHz	60Hz (VESA)	+	+

CLASS NO.		17" V20 107E5-70K CMTR			
		TYPE : 107E51/87		8639 000 13531	
		BRAND : PHILIPS			
2002-12-13					
NAME	Roland	SUPERS.	29	590 — 5	10 A4
TY	CHECK	DATE	2002-12-13	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.	

GENERAL PRODUCT SPECIFICATION

PHILIPS



Factory preload modes : 14

Resolution	H. freq.	V. freq.
9. 640 x 350	31.5 KHz	70Hz
10. 640 x 350	37.9 KHz	85Hz
11. 640 x 480	37.5 KHz	75Hz
12. 640 x 480	37.9 KHz	72.8Hz
13. 640 x 480	50.6 KHz	100Hz
14. 720 x 400	37.9 KHz	85Hz
15. 800 x 600	37.9 KHz	60Hz
16. 800 x 600	48.1 KHz	72Hz
17. 800 x 600	63.9 KHz	100Hz
18. 832 x 624	49.7 KHz	75Hz
19. 1024x 468	48.4 KHz	60Hz
20. 1024x 768	56.5 KHz	70Hz
21. 1152x 864	67.5 KHz	75Hz
22. 1024x 768	60.0 KHz	75Hz

3.2 Timing requirements

The AUTOSCAN color monitor must be capable of displaying standard resolutions within the vertical(refresh) frequency range of 50 to 160 Hz and horizontal scan range of 30 - 70 KHz.

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		TYPE : 107E51/87		8639 000 13531	
		BRAND : PHILIPS			
2002-12-13					
NAME	Roland	SUPERS.	29	590 — 6	10 A4
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2838 100 05424

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TIMING FOR 107E5 70K COLOR MONITOR

REFERENCE PATTERN GENERATOR : CHROMA 2135

* According VESA version 1.0 release 0.6p

Factory preset modes

TABLE 1: 31.469 KHz/70.087 Hz, 720 X 400, pixel=28.325 MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 31.774 us	Total size = 14.268 ms
Display size = 25.422 us	Display size = 12.711 ms
Rear porch = 1.907 us	Rear porch = 1.112 ms
Sync width = 3.813 us	Sync width = 0.064 ms
Sync.polarity = -	Sync.polarity = +

TABLE 2: 31.469KHz/59.940 Hz, 640 X 480, pixel=25.175 MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 31.778 us	Total size = 16.683 ms
Display size = 25.422 us	Display size = 15.253 ms
Rear porch = 1.907 us	Rear porch = 1.049 ms
Sync width = 3.813 us	Sync width = 0.064 ms
Sync.polarity = -	Sync.polarity = -

TABLE 3: 43.269KHz/85.008 Hz, 640 X 480, pixel=36.000 MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 23.111 us	Total size = 11.764 ms
Display size = 17.778 us	Display size = 11.093 ms
Rear porch = 2.222 us	Rear porch = 0.578 ms
Sync width = 1.556 us	Sync width = 0.069 ms
Sync.polarity = -	Sync.polarity = -

TABLE 4: 46.875 KHz/75 Hz, 800 X 600, pixel=49.500 MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 21.333 us	Total size = 13.333 ms
Display size = 16.162 us	Display size = 12.800 ms
Rear porch = 3.232 us	Rear porch = 0.448 ms
Sync width = 1.616 us	Sync width = 0.064 ms
Sync.polarity = +	Sync.polarity = +

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TABLE 5: 53.674 KHz/85.061 Hz, 800 X 600, pixel=56.250 MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 18.631 us	Total size = 11.756 ms
Display size = 14.222 us	Display size = 11.179 ms
Rear porch = 2.702 us	Rear porch = 0.503 ms
Sync width = 1.138 us	Sync width = 0.056 ms
Sync.polarity = +	Sync.polarity = +

TABLE 6 : 60.0 KHz/60 Hz, 1280 X 960, pixel= 108MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 16.667 us	Total size = 16.667 ms
Display size = 11.852 us	Display size = 16.000 ms
Rear porch = 2.889 us	Rear porch = 0.600 ms
Sync width = 1.037 us	Sync width = 0.050 ms
Sync.polarity = +	Sync.polarity = +

TABLE 7: 63.981 KHz/60 Hz, 1280 X 1024, pixel=108 MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 15.630 us	Total size = 16.661 ms
Display size = 11.852 us	Display size = 16.005 ms
Rear porch = 2.296 us	Rear porch = 0.594 ms
Sync width = 1.037 us	Sync width = 0.047 ms
Sync.polarity = +	Sync.polarity = +

TABLE 8: 68.677 KHz/85 Hz, 1024 X 768, pixel=94.500 MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 14.561 us	Total size = 11.765 ms
Display size = 10.836 us	Display size = 11.183 ms
Rear porch = 2.201 us	Rear porch = 0.524 ms
Sync width = 1.016 us	Sync width = 0.044 ms
Sync.polarity = +	Sync.polarity = +

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Factory preload modes

TABLE 9: 31.469KHz/70.087 Hz, 640 X 350, pixel=25.175MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 31.778 us	Total size = 14.268 ms
Display size = 25.422 us	Display size = 11.122 ms
Rear porch = 1.907 us	Rear porch = 1.907 ms
Sync width = 3.813 us	Sync width = 0.064 ms
Sync.polarity = +	Sync.polarity = -

TABLE 10: 37.861KHz/85.08 Hz, 640 X 350, pixel=31.5MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 26.413 us	Total size = 11.754 ms
Display size = 20.317 us	Display size = 9.244 ms
Rear porch = 3.048 us	Rear porch = 1.585 ms
Sync width = 2.032 us	Sync width = 0.079 ms
Sync.polarity = +	Sync.polarity = -

TABLE 11: 37.5KHz/75 Hz, 640 X 480, pixel=31.5MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 26.667 us	Total size = 13.333 ms
Display size = 20.317 us	Display size = 12.8 ms
Rear porch = 3.810 us	Rear porch = 0.427 ms
Sync width = 2.032 us	Sync width = 0.08 ms
Sync.polarity = -	Sync.polarity = -

TABLE 12: 37.861KHz/72.809 Hz, 640 X 480, pixel=31.5MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 26.413 us	Total size = 13.735 ms
Display size = 20.317 us	Display size = 12.678 ms
Rear porch = 4.064 us	Rear porch = 0.739 ms
Sync width = 1.270 us	Sync width = 0.079 ms
Sync.polarity = -	Sync.polarity = -

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TABLE 13: 50.625 KHz/100.049 Hz, 640 X 480, pixel=40.5MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 19.752 us	Total size = 9.995 ms
Display size = 15.802 us	Display size = 9.481 ms
Rear porch = 1.975 us	Rear porch = 0.435 ms
Sync width = 1.580 us	Sync width = 0.059 ms
Sync.polarity = -	Sync.polarity = -

TABLE 14: 37.927 KHz/85.039 Hz, 720 X 400, pixel=35.5 MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 26.366 us	Total size = 11.759 ms
Display size = 20.282 us	Display size = 10.546 ms
Rear porch = 3.042 us	Rear porch = 1.107 ms
Sync width = 2.028 us	Sync width = 0.079 ms
Sync.polarity = -	Sync.polarity = +

TABLE 15: 37.879 KHz/60.317 Hz, 800 X 600, pixel=40MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 26.400 us	Total size = 16.579 ms
Display size = 20.000 us	Display size = 15.840 ms
Rear porch = 2.200 us	Rear porch = 0.607 ms
Sync width = 3.200 us	Sync width = 0.106 ms
Sync.polarity = +	Sync.polarity = +

TABLE 16: 48.077 KHz/72.188 Hz, 800 X 600, pixel=50MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 20.800 us	Total size = 13.853 ms
Display size = 16.000 us	Display size = 12.480 ms
Rear porch = 1.280 us	Rear porch = 0.478 ms
Sync width = 2.400 us	Sync width = 0.125 ms
Sync.polarity = +	Sync.polarity = +

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TABLE 17: 63.92KHz/100 Hz, 800 X 600, pixel=67.5MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 15.644 us	Total size = 9.997 ms
Display size = 11.852 us	Display size = 9.387 ms
Rear porch = 2.370 us	Rear porch = 0.548 ms
Sync width = 0.948 us	Sync width = 0.047 ms
Sync.polarity = +	Sync.polarity = +

TABLE 18: 49.714KHz/74.534 Hz, 832 X 624, pixel=57.27MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 20.115 us	Total size = 13.417 ms
Display size = 14.528 us	Display size = 12.552 ms
Rear porch = 3.911 us	Rear porch = 0.784 ms
Sync width = 1.118 us	Sync width = 0.060 ms
Sync.polarity = -	Sync.polarity = -

TABLE 19: 48.363 KHz/60.004 Hz, 1024 X 768, pixel=65MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 20.677 us	Total size = 16.666 ms
Display size = 15.754 us	Display size = 15.880 ms
Rear porch = 2.462 us	Rear porch = 0.600 ms
Sync width = 2.092 us	Sync width = 0.124 ms
Sync.polarity = -	Sync.polarity = -

TABLE 20: 56.476KHz/70.069 Hz, 1024 X 768, pixel=75MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 17.707 us	Total size = 14.272 ms
Display size = 13.653 us	Display size = 13.599 ms
Rear porch = 1.920 us	Rear porch = 0.513 ms
Sync width = 1.813 us	Sync width = 0.106 ms
Sync.polarity = -	Sync.polarity = -

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TABLE 21: 67.5 KHz/75Hz, 1152 X 864, pixel=108MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 14.815 us	Total size = 13.333 ms
Display size = 10.667 us	Display size = 12.8 ms
Rear porch = 2.370 us	Rear porch = 0.474 ms
Sync width = 1.185 us	Sync width = 0.044 ms
Sync.polarity = +	Sync.polarity = +

TABLE 22: 60.03 KHz/75 Hz, 1024 X 768, pixel=78.750 MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 16.660 us	Total size = 13.328 ms
Display size = 13.003 us	Display size = 12.795 ms
Rear porch = 2.235 us	Rear porch = 0.466 ms
Sync width = 1.219 us	Sync width = 0.050 ms
Sync.polarity = +	Sync.polarity = +

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- 3.2.1Horizontal scanning
Scanning frequency : 30 - 70 KHz
H-shift range : 10 mm Min. (for preset modes only)
- 3.2.2Vertical scanning

Scanning frequency : 50 - 160 Hz
V-shift range : 10 mm min. (for preset modes only)
- 3.3Power supply

The display device maintains the specified performance in the range described as bellows :

Type	Mains current	Mains Voltage	Mains freq.
120V version	1.0A Max.	90 - 132 VAC	60 +/- 3 Hz
230V version	0.6A Max.	198 - 264 VAC	50+/- 3 Hz
Full Range	1.5A Max.	90 - 264 VAC	47-63 Hz
Power consumption : 75 Watts Max. Power cord length : 1.45M Power cord type : 3 leads plug power cord With protective earth plug or IBM Hooded			

3.4 Power saving management system

	Signal			Compliance	Power
	H-Sync	V-Sync	Video	Requirement	
On	Active	Active	Active	Mandatory	75w
Off	Inactive	Active	Blanked	Mandatory	1 w
Off	Active	Inactive	Blanked	Mandatory	1 w
Off	Inactive	Inactive	Blanked	Mandatory	1 w

Remark: Transition time from ON to any power saving mode will have 5 seconds delay.

3.5 CRT Description

This display unit employs a high resolution CRT complying with the following specifications :

- Dimensions : 17 inches flat/square screen
- Pitch : 0.27mm dotted with black matrix
- Deflection angle : 90 degrees
- Light transmission : 47%(PH),46%(CPT),52(LG) (dark glass)
- Face treatment : Anti-glare, anti-static
- Implosion protection : By P-Mini-rim-band.
- EHT : 25.0 1 KV (Ib=0)
- Visible screen area : 327.2 mm x 245.44mm
- CRT Source : PHILIPS tube, CPT tube, LG tube,SDI

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- 3.6 RGB Amplifier
- 3.6.1 Video amplifiers
- Dot Rate : 108 MHz
- Over / undershoot : 15% Max.
- (Transient response)
- Sag : 5% Max.(pulses of 0.70H)
- Black level shift : 5% Max.
- 3.6.2 Brightness and Contrast
- Reference mode 68.7 KHZ/85 HZ full white pattern.

DISPLAY LIGHT OUTPUT

Brightness	Contrast	Light output (full white)
Minimum	Minimum	not visible
Center	Maximum	30+/- 5 FL.

100mmx100mm block
Brightness at center and contrast at maximum light output is 41+/-6 FL.

sRGB : When sRGB is selected, the light output (Full white pattern) will be 23 +/- 3 FL regardless of main contrast and brightness controls. Adjusting contrast or brightness will auto exit sRGB setting and go to 6500K.

- 3.6.3 Raster light output
- Apply 68.7KHz/85Hz mode with no video pattern, set brightness at center click(50%) and contrast control at minimum
- The light output on the screen center should < 0.2FL.
- 3.7 Variation of image size (For preset modes only)
- Due to brightness change : 1.0 % max
- (Set brightness control at center click(50%), turn contrast control from Min. to Max.)
- Due to aging
(25 C, 300 hrs) : 1.0 %
- Due to mains voltage
variation (10%) : 1.0 %
- 3.8 Degaussing
- An automatic degaussing circuit is provided which requires no intervention.
- The degaussing activated at the time of switch on or switch on again after switching off degaussing circuits for longer than 30 minutes.
- 3.9 Phosphor protection
- The display device is sufficiently protected against the burning of phosphors in case of repetitive power cycling or absence of horizontal deflection.

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3.10 Low emission requirements.(MPRII/TCO99/TCO95)

Items	Band I ELF (rms)	Band II VLF (rms)
Alternating Electric Field	MPRII < 25 V/M TCO < 10 V/M	MPRII < 2.5 V/M TCO < 1.0 V/M
Magnetic Field	MPRII < 250 nT TCO < 200 nT	MPRII < 25 nT TCO <25 nT
Electrostatic Potential	<+/- 500 V	

Band I : 5 to 2K HZ.
Band II : 2K to 400K HZ.
Test procedure according to low emission and E.S.P. test method.

3.11 Display data channel : DDC2B (VESA STANDARD)

The DDC HEX Data (refer sheet 190) should be written into the DDC IC (24LC21 or equivalent)

	DDC1	DDC2B
Software		V
Hardware		

4.0 Display image (CRT facing east)

The monitor is aligned in a magnetic cage having the following magnetic field components :

Northern Hemisphere : H = 0, V = 450 mG, Z = 0

Southern Hemisphere : H = 0, V = -500 mG, Z = 0

Equatorial Support : H = 0, V = 0 mG, Z = 0

Conditions for visual testing, unless otherwise stated:

Input video signal - 700 mVpp cross hatch

Brightness control - center position

Contrast control - maximum position

4.1 Display resolutions

See 3.1.3

4.2 Image size (For preset modes only)

The dimensions of guaranteed display area to be measured along the picture center of horizontal and vertical axis of the screen as listed below: (preset modes only, refer to fig. 1)

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Width : 306 +/- 3 mm
Height : 230 +/- 3 mm

4.3 Image centering deviation (For preset modes only)

With respect to fig. 2, the target relationships are the following :

$|A - B| \leq 5 \text{ mm} \quad |C - D| \leq 5 \text{ mm}$

Note : This centering is adjustable by the end-user.

4.4 Picture shift control range (For preset modes only)

H-shift range : 10 mm min.
V-shift range : 10 mm min.

4.5 Picture tilt

With respect to Fig. 3, Tilt to be measured on extremes of center line from bezel.

$|A - B| : \leq 2 \text{ mm}$

4.6 Geometrical distortions (For preset modes only)

It is acceptable that pincushion, trapezoid, rhomboid, rotation and various waves distortions must remain within the limits of tolerance as in fig. 4, where $A = B = 2.0 \text{ mm}$.
 $C = D = 2.0 \text{ mm}$.

The waviness of any vertical or horizontal shall be less than 1.0 mm over a 50 mm distance.

4.7 Image non-linearity pattern with
12 equal blocks along horizontal axis,
9 equal blocks along vertical axis. (see Fig. 1) (For preset modes only)

H: 12 % (for VGA mode <45KHz), others modes <10%
V: 10% for all modes

Deviation of Two adjacent block:
H: 8 % (for VGA mode <45KHz), others modes <6%
V: 6% for all modes

$$\text{H. non-linearity} = \frac{X. \text{ Max.} - X. \text{ min.}}{X. \text{ Max.}} \times 100\%$$

$$\text{V. non-linearity} = \frac{Y. \text{ Max.} - Y. \text{ min.}}{Y. \text{ Max.}} \times 100\%$$

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- 4.8 Mis-convergence
The maximum convergence error to be measured on a white spot or white display line to represents the maximum distance between the energy centers of any two primary colors. (See Fig. 6) **For VGA mode <45KHz Zone B: 0.4mm.**

CONVERGENCE SPEC.

Zones	0.27 mm CRT
Zone C	0.15 mm
Zone A	0.25 mm
Zone B	0.35 mm

- 4.9 Focus check (68.7 KHZ / 85 HZ)
Adjust brightness control to center click and contrast control to get 25 FL at full white pattern , then generate me characters to cover entire of the picture the characters should be clearly identified in all display area. (See Fig. 7)

- 4.10 Luminance uniformity
condition : With full white pattern, set contrast control at maximum position and brightness control at center click position.
The center of the display is 30 FL+/-5. , the Max. deviation of the screen should not exceed 25% .

- 4.11 White color adjustment
Based on the 1931 CIE chromatic diagram (x,y)
coordinates of white display on screen center should be:
For 9300 K X = 0.283 0.015 (+/- 0.018 for B grade CRT of PH)
Y = 0.297 0.015 (+/- 0.018 for B grade CRT of PH)
For 6500 K X = 0.313 0.015 (+/- 0.018 for B grade CRT of PH)
Y = 0.329 0.015 (+/- 0.018 for B grade CRT of PH)
For sRGB X = 0.313 0.015 (+/- 0.018 for B grade CRT of PH)
Y = 0.329 0.015 (+/- 0.018 for B grade CRT of PH)

Check conditions :
Set brightness control at center click position and contrast at maximum position.

- 4.12 Color tracking on full white pattern
To adjust the luminance output from 3 to 30 FL. By turning the contrast control (brightness control at center click position), the color co-ordinates should not deviate more than the following tolerance when compare to display center:
X= X (center) 0.015
Y= Y (center) 0.015

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- 4.13 Purity
- Test patterns : Full white / Red / Green / Blue.
Conditions : As stated in item 4.0, the purity must be checked under specific destinations of earth magnetic environments and the monitor to be well degaussed.
- After warming-up time of 30 min. , no color stains may occur in above four patterns.
- 4.14 Moir
- Condition: Displaying a full white pattern, at any preset mode , the display size to be set as Fig.1
- The clouding effect must not rise to disturbing levels in anywhere of the screen with luminance setting from 15 to 30 FL.
- 4.15 Blemish
- Blemish shall be in accordance with CRT specification.

5.0 Mechanical characteristics

- 5.1 User controls
- Power ON/OFF switch
 - 5 Key digital user control

- 5.2 Connectors and cables

5.2.1 Power cord type :3 leads plugable power cord
with protective earthed plug or IBM Hooded

Length : 1.45 m +/- 50 mm (exc. connector)
Safety requirements : See following.

Countries	Approval		
	Mains plug	Wire	Connector
Germany	VDE	VDE	VDE
Switzerland	--	SVE	SVE
Belgium	CEBEC	--	--
Sweden	SEMKO	SEMKO	SEMKO
Finland	EI	--	EI
Norway	NEMKO	NEMKO	--
Denmark	DEMKO	DEMKO	DEMKO
Italy	OVE	--	OVE
Netherlands	KEMA	KEMA	KEMA
U.K.	ASTA	HAR	ASTA
U.S.A.	UL	UL	UL
Canada	CSA	CSA	CSA
Australia	SAA	SAA	SAA

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- 5.2.2 Signal cable
- Length of video : 1.45 m +/- 50 mm flying with 15 pin PS/2 D-shell socket
- 5.3 Tilt and swivel base
- Tilt angle : 5 forward and 15 backward
- Swivel rotation : 90 leftward or rightward

6.0 Environmental characteristics

The following sections to define the interference and susceptibility condition limits that might occur between external environment and the display device.

6.1 Susceptibility of display to external environment

- 6.1.1 (A) Operating limits
- Temperature : 0C to 40C
- Humidity : 10 to 90% (W/O condensation)
- Air pressure : 700 ~ 1100 mbar
- (B) Non-operating limits (storage)
- Temperature : -25C to 65C
- Humidity : 5 to 95 % (W/O condensation)
- Altitude : 300 to 1100 mbar

- 6.1.2 Transportation packages
- A) Carton box
- A-1 Size (with pedestal)
- 496(W)495(H)518(D)
- A-2 Carton paper : double wall AB flute corrugate board, color brown
- Bursting : 19.3 kg/cm² min
- Compression : 600 kg min
- B) Transportation conditions
- B-1 Container loading (separated pedestal)

Q'ty	Container size			
	40'		20'	
	W/pallet		W/ pallet	
	Yes	No	Yes	No
Layers	4	4	4	4
Sets per layer	4	4	4	4
Sets per block	16	16	16	16
Blocks per container	24	24	10	10
Total sets	384	384	160	160

B-2 Transportation standards

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TRANSPORTATION TEST OF BU-MONITORS		
TEST ITEM	TEST CONDITION	STANDARD REFERENCE
1. PACKAGED TEST:		
1.1 Packaged random vibra. test	<ul style="list-style-type: none">5~200 Hz, 0.73 Grms,30 MIN/ AXIS, 3 AXES.,	Ref. ASTM D-4169
1.2 Drop test	<ul style="list-style-type: none">Gross weight drop height: 9.53~18.59 kg 76 cmSequence: 1C-3E-6F, 10 drops,	NSTA NSTA
1.3 Cold drop test (Only for reference)	<ul style="list-style-type: none">-10°C for 16 hours, recovery time after cold test: (during 5 minutes)Gross weight drop height: 9.53~18.59 kg 61cmSequence: 1C-3F, 4drops,1 set: C345-F4-F5-F3,1 set: C261-F2-F6-F1	UN-D1400 NSTA
2. UN-PACKAGED VIBRATION TEST:		
2.1 Operating random vibra. test	<ul style="list-style-type: none">5~500Hz, 0.25 Grms,30 min/axis 3 axes.Frequency: (Hz): 5,350,500G²/ Hz: 0.001, 0.0001, 0.00005	Ref. OEM spec.
2.2 Shock test (half sine)	<ul style="list-style-type: none">a. 120G, <3 msec, 6 shocksG value measurement filter: 330HzExclude CRT impurity	Ref. OEM spec.

6.2 Display disturbances from external environment

6.2.1 ESD Disturbances
According to EN50082-1 (also refer to IEC801-2 for detail).

6.3 Display disturbances to external environment

The disturbances induced by the display and tolerated by the environment are defined as follows :

6.3.1 Ionizetic radiation

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	TYPE : 107E51/87				
	BRAND : PHILIPS				
2002-12-13					
NAME Roland	SUPERS.	29	590	20	10
TY	CHECK	DATE 2002-12-13	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.		A4

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6.3.2 EMI/EMS
Can comply with FCC part 15,DOC C108.8 and EN55022.
EMS EN61000-4-3 (80% 1KHz AM modulation) Picture jitter 2mm.

7.0 Safety tests

7.1 Dielectric strength (Hi-pot test)
According to IEC950, UL1950 and CSA 22.2 No 950

7.2 Resistance for protective earthing
According to IEC950

7.3 Leakage current
According to IEC950, UL1950 and CSA22.2 No. 950

7.4 Grounding
According to IEC950, UL1950 and CSA22.2 No. 950

8.0 Certifications

8.1 Safety
The monitors comply with the following safety standards:

- IEC950
- UL1950
- DHHS 21 CFR, subchapter J
- CSA-22.2 NO. 950
- GERMANY ZH1/618(GS),ISO9241-3,-8

8.2 EMI (Electromagnetic Interference)
The monitor comply with the following EMI standards :

- EN55022
- FCC Part 15
- DOC C108.8

8.3 Fulfil approbation requirements
Destination basis, set can fulfil following requirements:

Countries	Safety	EMI
Germany	TUV,GS	CE
Sweden	SEMKO	----
Norway	NEMKO	----
Denmark	DEMKO	----
Finland	FIMKO	----
Spain	HOMOLOGATION	CE
UK	BEAB	CE
U.S.A.	UL , DHHS	FCC
Canada	CSA	DOC
Japan	----	VCCI

CLASS NO.		17" V20 107E5-70K CMTR			
		TYPE : 107E51/87		8639 000 13531	
		BRAND : PHILIPS			
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NAME	Roland	SUPERS.	29	590 — 21	10 A4
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9.0 Reliability

9.1 Mean time between failures
MTBF to be calculated according to Military standard MIL-HDBK-217C.

MTBF 75,000 Hours (Excluding CRT)

$$\text{PRACTICE of MTBF} = \frac{\text{TOTAL HRS (POWER ON)} \times \text{TOTAL SETS}}{\text{NBR. OF FAILURE SETS}}$$

10.0 Quality assurance requirements

10.1 Acceptance test

According to MIL-STD-105D level II,
AQL : 0.4 (Major)
: 1.0 (Minor)

Customer acceptance : UAW 0377/40
criteria

11.0 Service ability

The service ability of this monitor should fulfil the requirements which are prescribed in UAW-0346 and must be checked with the check list UAT - 0361

CLASS NO.		17" V20 107E5-70K CMTR			
		TYPE : 107E51/87		8639 000 13531	
		BRAND : PHILIPS			
2002-12-13					
NAME	Roland	SUPERS.	29	590	— 22
TY		CHECK	DATE 2002-12-13	10	A4
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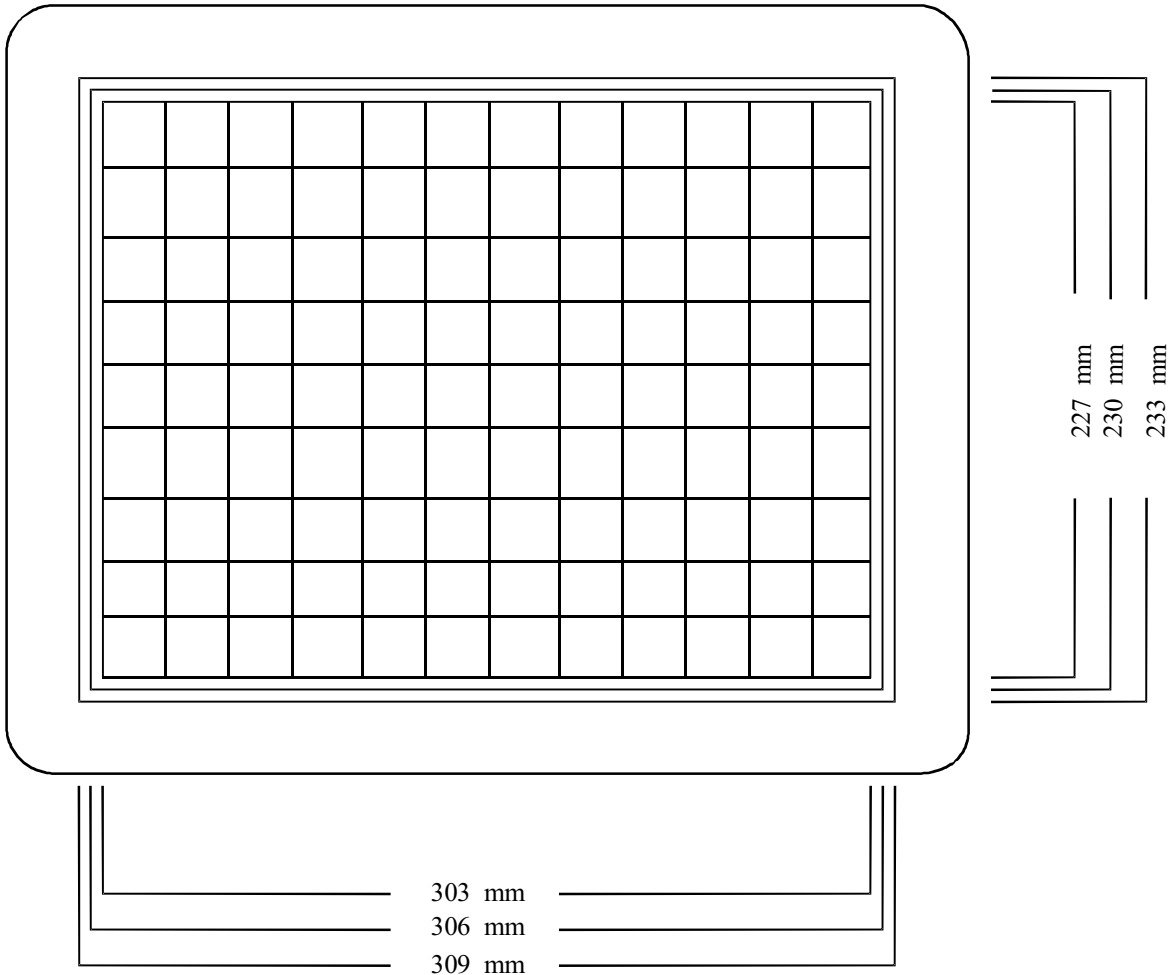
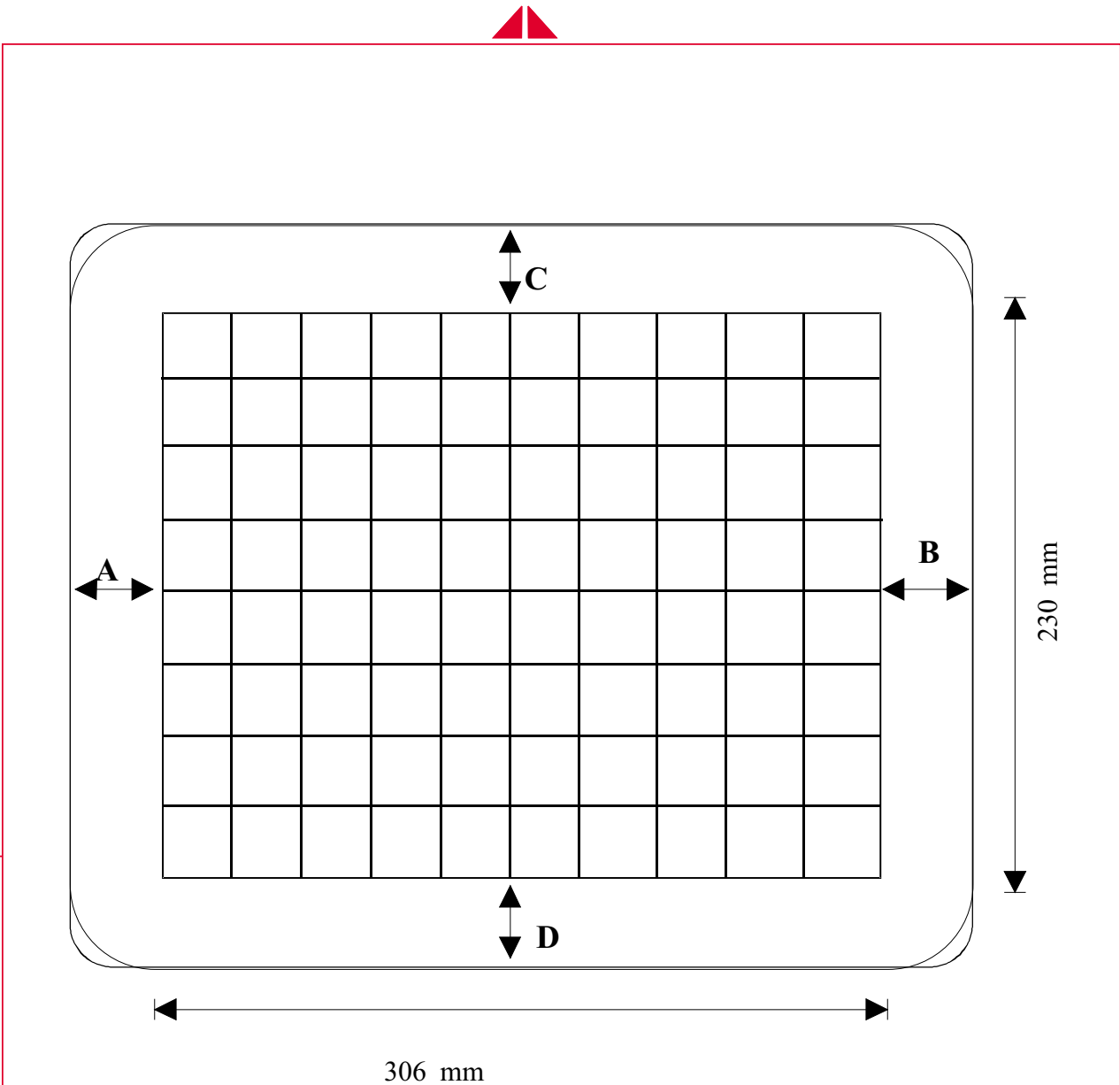


FIG-1 IMAGE DIMENSION

CLASS NO.		17" V20 107E5-70K CMTR			
		TYPE : 107E51/87		8639 000 13531	
		BRAND : PHILIPS			
2002-12-13					
NAME	Roland	SUPERS.	29	590	23
TY		CHECK	DATE 2002-12-13	10	A4
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|A-B| AND |C-D| ≤ 5 mm

FIG-2 IMAGE CENTERING

CLASS NO.		17" V20 107E5-70K CMTR			
		TYPE : 107E51/87		8639 000 13531	
		BRAND : PHILIPS			
2002-12-13					
NAME	Roland	SUPERS.	29	590	24
TY		CHECK	DATE 2002-12-13	10	A4
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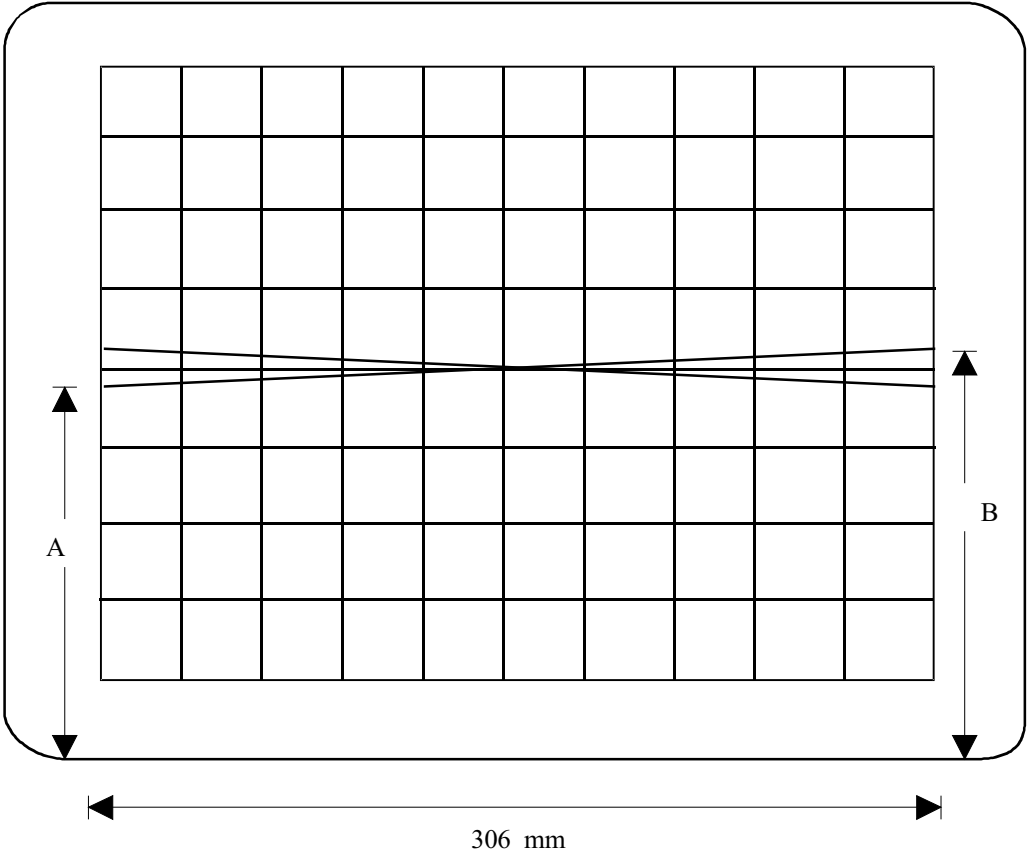


FIG-3 IMAGE ROTATION

		CLASS NO.		17" V20 107E5-70K CMTR				8639 000 13531						
												TYPE : 107E51/87 BRAND : PHILIPS		
		2002-12-13												
	NAME Roland			SUPERS.			29		590 — 25		10		A4	
TY			CHECK	DATE 2002-12-13		Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.								



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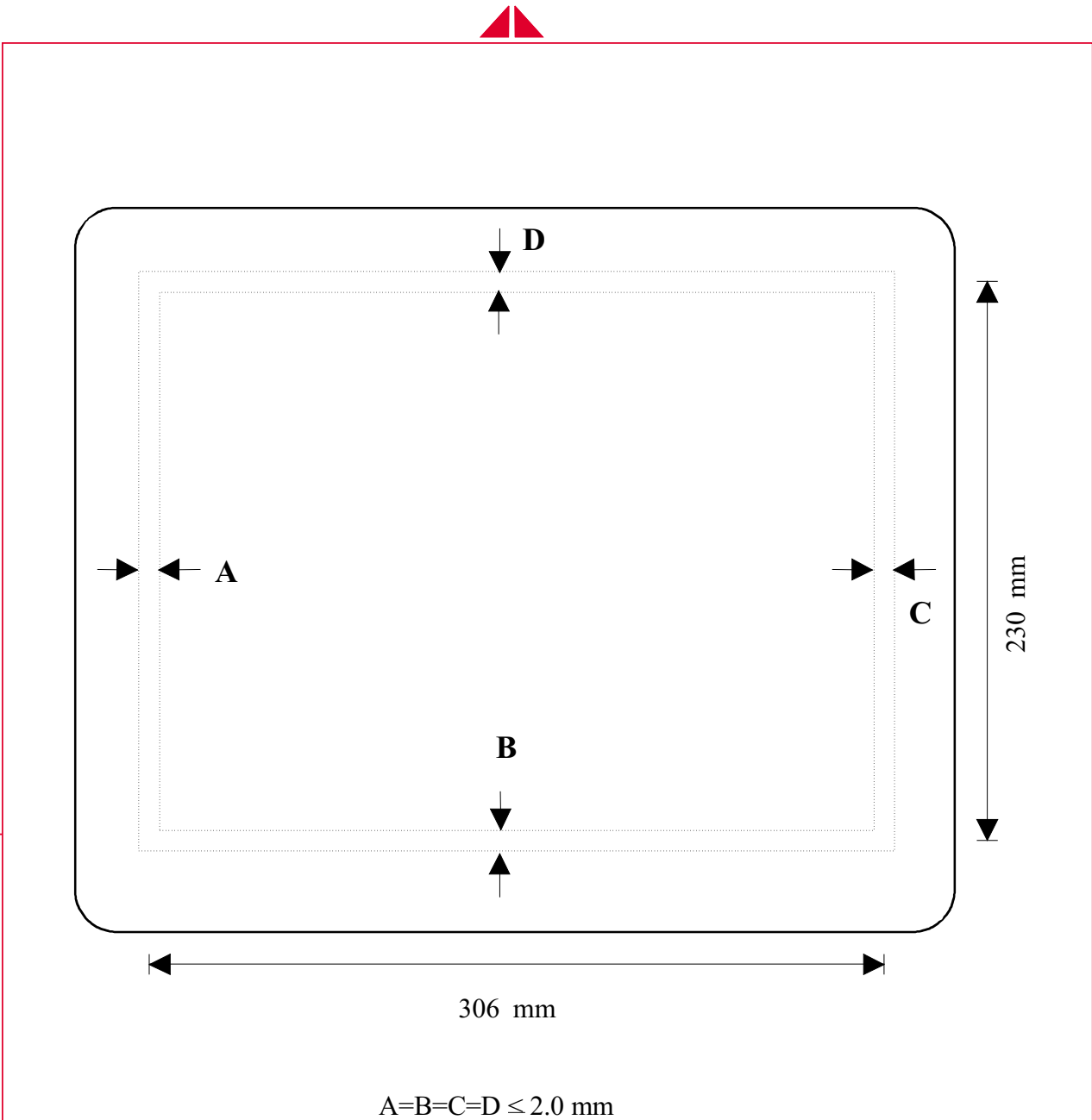


FIG-4 IMAGE GEOMETRY

CLASS NO.		17" V20 107E5-70K CMTR			
		TYPE : 107E51/87		8639 000 13531	
		BRAND : PHILIPS			
2002-12-13					
NAME	Roland	SUPERS.	29	590	— 26
TY		CHECK	DATE 2002-12-13	10	A4
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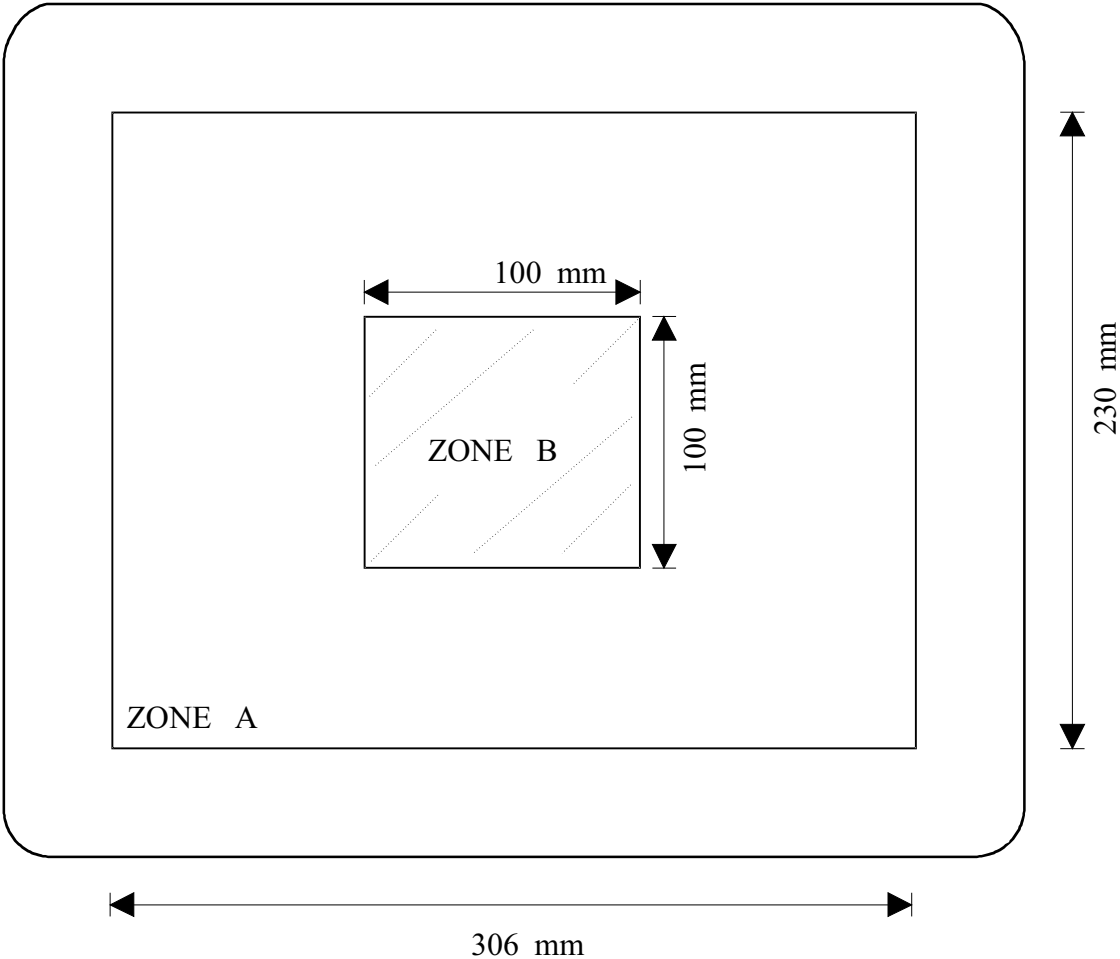


FIG-5 CONTRAST AND BRIGHTNESS MEASUREMENT AREA

CLASS NO.		17" V20 107E5-70K CMTR						
		TYPE : 107E51/87			8639 000 13531			
		BRAND : PHILIPS						
2002-12-13								
NAME	Roland	SUPERS.	29	590	—	27	10	A4
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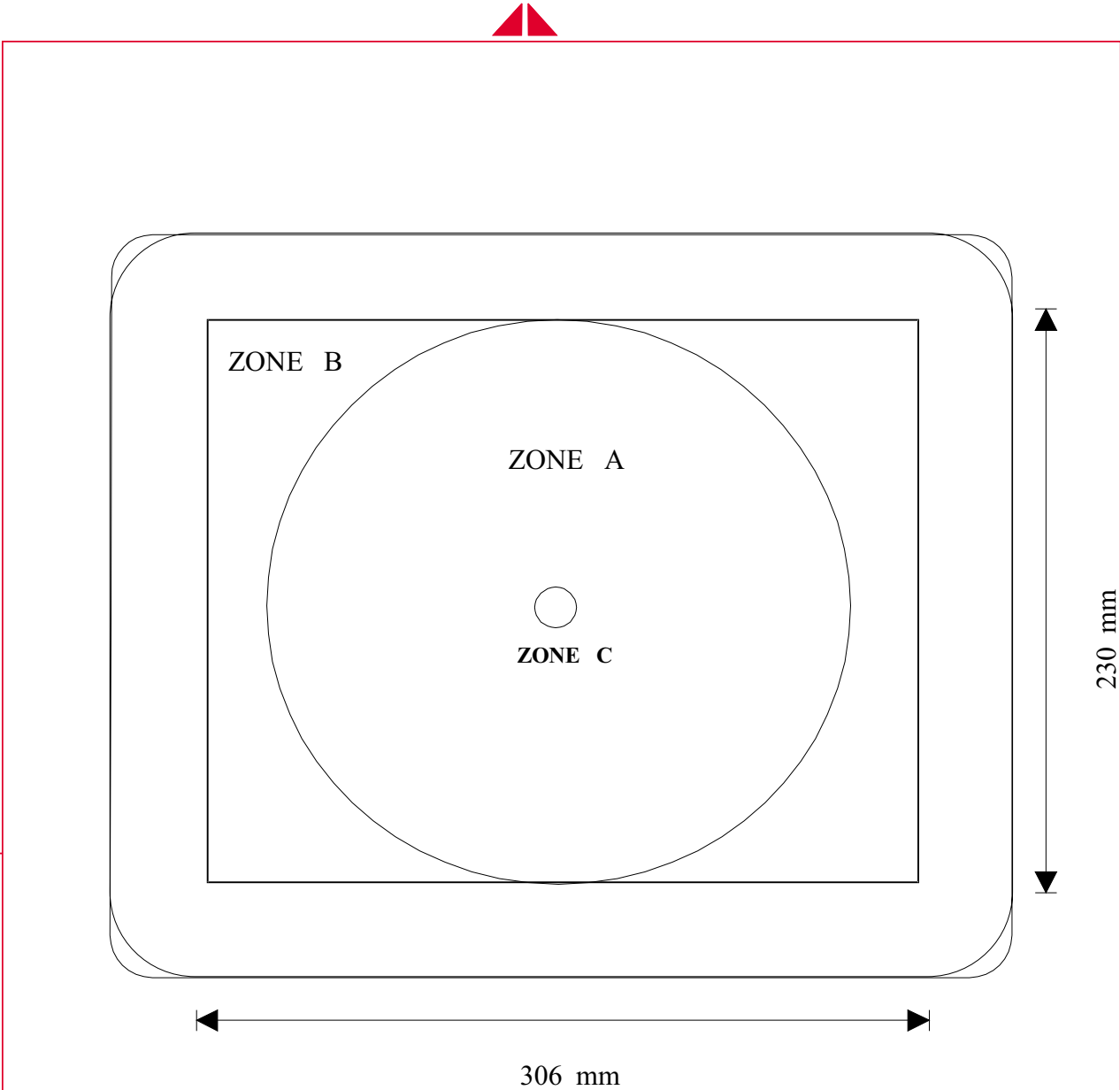


FIG-6 MISCONVERGENCE

CLASS NO.		17" V20 107E5-70K CMTR			
		TYPE : 107E51/87		8639 000 13531	
		BRAND : PHILIPS			
2002-12-13					
NAME	Roland	SUPERS.	29	590	— 28
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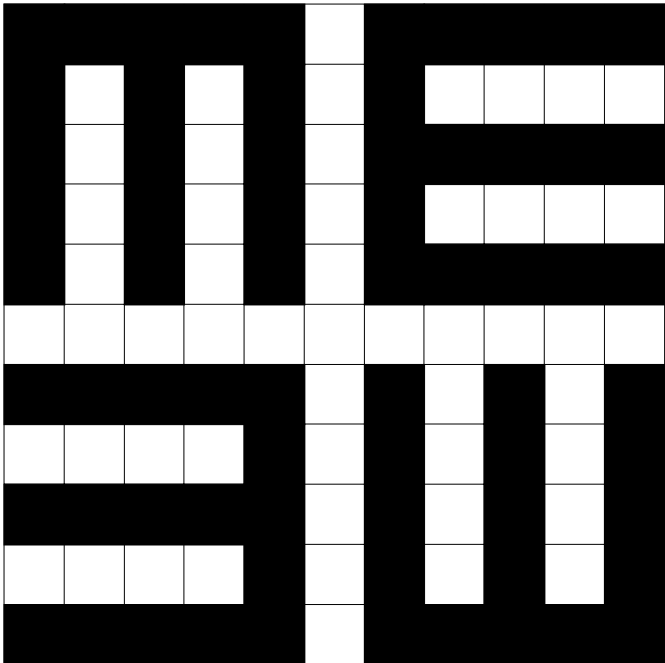


Figure 7

Focus check character

CLASS NO.		17" V20 107E5-70K CMTR			
		TYPE : 107E51/87		8639 000 13531	
		BRAND : PHILIPS			
2002-12-13					
NAME	Roland	SUPERS.	29	590 — 29	10 A4
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